

| Polypeptide           | Amino acid sequence |            |            |            | SEQ ID NO:          |    |
|-----------------------|---------------------|------------|------------|------------|---------------------|----|
| Z <sub>wt</sub>       | VDNKFNKEQQ          | NAFYEIILHP | NLNEEQRNAF | IQSLKDDPSQ | SANLLAEAKK LNDQAQPK | 1  |
| Z <sub>HER2 A</sub>   | VDNKFNKELR          | QAYWEIQALP | NLNWTQSRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 2  |
| Z <sub>HER2 B</sub>   | VDNKFNKEPK          | TAYWEIVKLP | NLNPEQRRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 3  |
| Z <sub>HER2 C</sub>   | VDNKFNKEPR          | EAYWEIQRLP | NLNKQKAAF  | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 4  |
| Z <sub>HER2 D</sub>   | VDNKFNKEWV          | QAGSEIYNLP | NLNRAQMRAF | IRSLSDPSQ  | SANLLAEAKK LNDQAQPK | 5  |
| Z <sub>HER2:101</sub> | VDNKFNKEMR          | HAYWEIVKLP | NLNPRQKRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 6  |
| Z <sub>HER2:102</sub> | VDNKFNKEMR          | KAYWEIVLLP | NLNRRQSRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 7  |
| Z <sub>HER2:103</sub> | VDNKFNKEMR          | HAYWEIATLP | NLNWQKRAF  | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 8  |
| Z <sub>HER2:104</sub> | VDNKFNKEFR          | TAYWEIVLLP | NLNPGQIRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 9  |
| Z <sub>HER2:105</sub> | VDNKFNKELR          | TAYWEIVLLP | NLNTWQIRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 10 |
| Z <sub>HER2:106</sub> | VDNKFNKEPR          | KAYWEIAVLP | NLNPAQKRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 11 |
| Z <sub>HER2:107</sub> | VDNKFNKEMR          | NAYWEIALLP | NLNNOQKRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 12 |
| Z <sub>HER2:108</sub> | VDNKFNKELR          | TAYWEIVGLP | NLNHFQVRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 13 |
| Z <sub>HER2:109</sub> | VDNKFNKELR          | TAYWEIVLLP | NLNRWQIRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 14 |
| Z <sub>HER2:110</sub> | VDNKFNKEIR          | NAYWEIALLP | NLNNMQKRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 15 |
| Z <sub>HER2:112</sub> | VDNKFNKEFR          | KAYWEIVVLP | NLNRMQIRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 16 |
| Z <sub>HER2:113</sub> | VDNKFNKEFR          | TAYWEIVLLP | NLNREQGRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 17 |
| Z <sub>HER2:114</sub> | VDNKFNKEMR          | TAYWEIATLP | NLNKQIRAF  | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 18 |
| Z <sub>HER2:115</sub> | VDNKFNKEFR          | NAYWEIVVLP | NLNNRQKRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 19 |
| Z <sub>HER2:116</sub> | VDNKFNKEFR          | NAYWEIAKLP | NLNNGQKRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 20 |
| Z <sub>HER2:118</sub> | VDNKFNKEFR          | QAYWEIALLP | NLNHSQTRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 21 |
| Z <sub>HER2:120</sub> | VDNKFNKEPR          | HAYWEIVKLP | NLNSLQKRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 22 |
| Z <sub>HER2:121</sub> | VDNKFNKELR          | TAYWEIVGLP | NLNSRQSRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 23 |
| Z <sub>HER2:122</sub> | VDNKFNKELR          | TAYWEIAGLP | NLNPQKQRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 24 |
| Z <sub>HER2:123</sub> | VDNKFNKEMR          | KAYWEITQLP | NLNTROTRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 25 |
| Z <sub>HER2:124</sub> | VDNKFNKEFR          | KAYWEIVLLP | NLNWEQNRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 26 |
| Z <sub>HER2:125</sub> | VDNKFNKEFR          | KAYWEITQLP | NLNREQNRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 27 |
| Z <sub>HER2:126</sub> | VDNKFNKEMR          | HAYWEIATLP | NLNTNQSRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 28 |
| Z <sub>HER2:127</sub> | VDNKFNKEMR          | NAYWEIVGLP | NLNRWQSRAF | IRSLYDDPSQ | SANLLAEAKK LNDQAQPK | 29 |

FIGURE 1

FIGURE 1

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| Polypeptide           | Amino acid sequence |            |             |            |            | SEQ ID NO: |    |
|-----------------------|---------------------|------------|-------------|------------|------------|------------|----|
| Z <sub>HER2:129</sub> | VDNKFNKELR          | NAYWEIVKLP | NLNPWQHRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 30 |
| Z <sub>HER2:130</sub> | VDNKFNKEFR          | TAYWEIVKLP | NLNVRSQSRF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 31 |
| Z <sub>HER2:133</sub> | VDNKFNKENR          | TAYWEIVKLP | NLNDYQKRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 32 |
| Z <sub>HER2:135</sub> | VDNKFNKEFR          | TAYWEITQLP | NLNLQSRF    | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 33 |
| Z <sub>HER2:137</sub> | VDNKFNKEIR          | TAYWEIAGLP | NLNAQKQRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 34 |
| Z <sub>HER2:138</sub> | VDNKFNKEMR          | QAYWEIVRLP | NLNAQKQRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 35 |
| Z <sub>HER2:139</sub> | VDNKFNKEMR          | NAYWEIVTLP | NLNTQSRF    | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 36 |
| Z <sub>HER2:140</sub> | VDNKFNKEMR          | QAYWEIVKLP | NLNPQSRF    | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 37 |
| Z <sub>HER2:148</sub> | VDNKFNKEMR          | TAYWEIALLP | NLNNMQKRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 38 |
| Z <sub>HER2:153</sub> | VDNKFNKEFR          | KAYWEIALLP | NLNNQSRF    | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 39 |
| Z <sub>HER2:158</sub> | VDNKFNKEMR          | KAYWEIALLP | NLNRWQIRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 40 |
| Z <sub>HER2:159</sub> | VDNKFNKEMR          | QAYWEIVLLP | NLNRWQTRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 41 |
| Z <sub>HER2:162</sub> | VDNKFNKELR          | KAYWEIVGLP | NLNRQKRAF   | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 42 |
| Z <sub>HER2:165</sub> | VDNKFNKEMR          | TAYWEIVGLP | NLNNQKRAF   | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 43 |
| Z <sub>HER2:167</sub> | VDNKFNKELR          | TAYWEIVRLP | NLNVNQTRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 44 |
| Z <sub>HER2:168</sub> | VDNKFNKEFR          | HAYWEIVRLP | NLNAQKQRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 45 |
| Z <sub>HER2:169</sub> | VDNKFNKELR          | KAYWEIVTLP | NLNPQKRAF   | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 46 |
| Z <sub>HER2:170</sub> | VDNKFNKEMR          | TAYWEIAKLP | NLNPQKRAF   | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 47 |
| Z <sub>HER2:171</sub> | VDNKFNKELR          | TAYWEIVTLP | NLNTSQTRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 48 |
| Z <sub>HER2:172</sub> | VDNKFNKELR          | KAYWEIQVLP | NLNVRSQKRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 49 |
| Z <sub>HER2:177</sub> | VDNKFNKEPR          | QAYWEIVLLP | NLNRQKRAF   | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 50 |
| Z <sub>HER2:178</sub> | VDNKFNKEMR          | NAYWEIVGLP | NLNPQKQRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 51 |
| Z <sub>HER2:179</sub> | VDNKFNKEPR          | QAYWEIVKLP | NLNNSQRRF   | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 52 |
| Z <sub>HER2:180</sub> | VDNKFNKENR          | TAYWEIVRLP | NLNSAQKRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 53 |
| Z <sub>HER2:205</sub> | VDNKFNKEMR          | NAYWEIVLLP | NLNRWQSRF   | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 54 |
| Z <sub>HER2:207</sub> | VDNKFNKEMR          | TAYWEIVILP | NLNRWQIRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 55 |
| Z <sub>HER2:209</sub> | VDNKFNKEMR          | NAYWEIALLP | NLNVAQKRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 56 |
| Z <sub>HER2:209</sub> | VDNKFNKEMR          | NAYWEIALLP | NLNVAQKRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 57 |
| Z <sub>HER2:222</sub> | VDNKFNKEFR          | QAYWEIVKLP | NLNSGQKRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 58 |
| Z <sub>HER2:223</sub> | VDNKFNKEMR          | TAYWEIVKLP | NLNTAQKRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 59 |
| Z <sub>HER2:225</sub> | VDNKFNKELR          | TAYWEIVSLP | NLNRNQSRF   | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 60 |
| Z <sub>HER2:226</sub> | VDNKFNKEMR          | NAYWEIVKLP | NLNPQSRF    | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 60 |

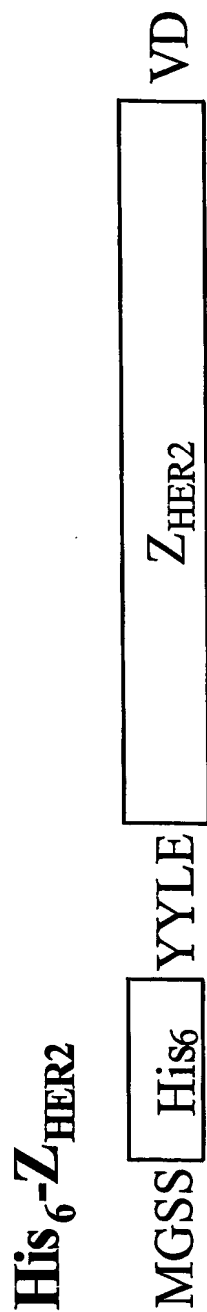
FIGURE 1

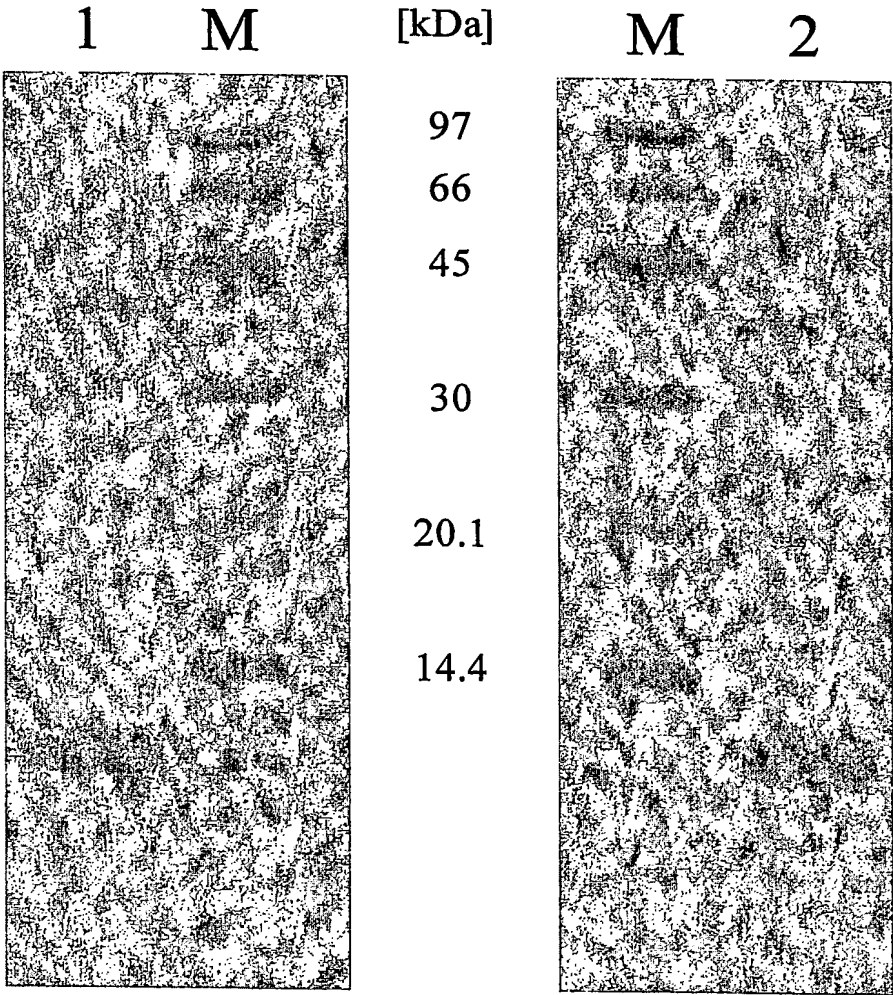
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| Polypeptide             | Amino acid sequence |            |            |            |            | SEQ ID NO: |    |
|-------------------------|---------------------|------------|------------|------------|------------|------------|----|
| Z <sub>HER2:227</sub>   | VDNKENKEMR          | QAYWEIALLP | NLNRWQIRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 61 |
| Z <sub>HER2:229</sub>   | VDNKENKEFR          | TAYWEIAVLP | NLNNQKRAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 62 |
| Z <sub>HER2:230</sub>   | VDNKENKECR          | TAYWEIVKLP | NLNNAQKRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 63 |
| Z <sub>HER2:232</sub>   | VDNKENKEPK          | TAYWEIVVLP | NLNSKQKRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 64 |
| Z <sub>HER2:233</sub>   | VDNKENKEMR          | NAYWEIVTLP | NLNKWQIRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 65 |
| Z <sub>HER2:234</sub>   | VDNKENKEMR          | KAYWEIATLP | NLNKSQSRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 66 |
| Z <sub>HER2:235</sub>   | VDNKENKEFR          | TAYWEIVTLP | NLNVGQTRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 67 |
| Z <sub>HER2:236</sub>   | VDNKENKELR          | TAYWEIVGLP | NLNTRQSRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 68 |
| Z <sub>HER2:237</sub>   | VDNKENKELR          | HAYWEIVQLP | NLNREQGRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 69 |
| Z <sub>HER2:239</sub>   | VDNKENKEFR          | HAYWEIILKP | NLNKGQHRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 70 |
| Z <sub>HER2:240</sub>   | VDNKENKEMR          | TAYWEIVSLP | NLNTLQSRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 71 |
| Z <sub>HER2:261</sub>   | VDNKENKEMR          | KAYWEIQGLP | NLNNRQKRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 72 |
| Z <sub>HER2:264</sub>   | VDNKENKEMR          | NAYWEIAKLP | NLNREQKRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 73 |
| Z <sub>HER2:265</sub>   | VDNKENKEMR          | HAYWEIVGLP | NLNMIQGRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 74 |
| Z <sub>HER2:271</sub>   | VDNKENKELR          | NAYWEIVKLP | NLNRAQNRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 75 |
| Z <sub>HER2:278</sub>   | VDNKENKELR          | TAYWEIILKP | NLNRYQRRAF | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 76 |
| Z <sub>HER2:0024*</sub> | VDNKENKEPR          | EAYWEIQRLP | NLNKQKTAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 77 |
| Z <sub>HER2:0434</sub>  | VDNKENKEMY          | AAYWEIIDLP | NLNTPIHAF  | IRSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 78 |
| Z <sub>HER2:3053</sub>  | VDNKENKETR          | SAYWEIVNLP | NLNQGQRHAF | IKSLYDDPSQ | SANLLAEAKK | LNDQAQPK   | 79 |

FIGURE 1

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**FIGURE 2**



**FIGURE 3**

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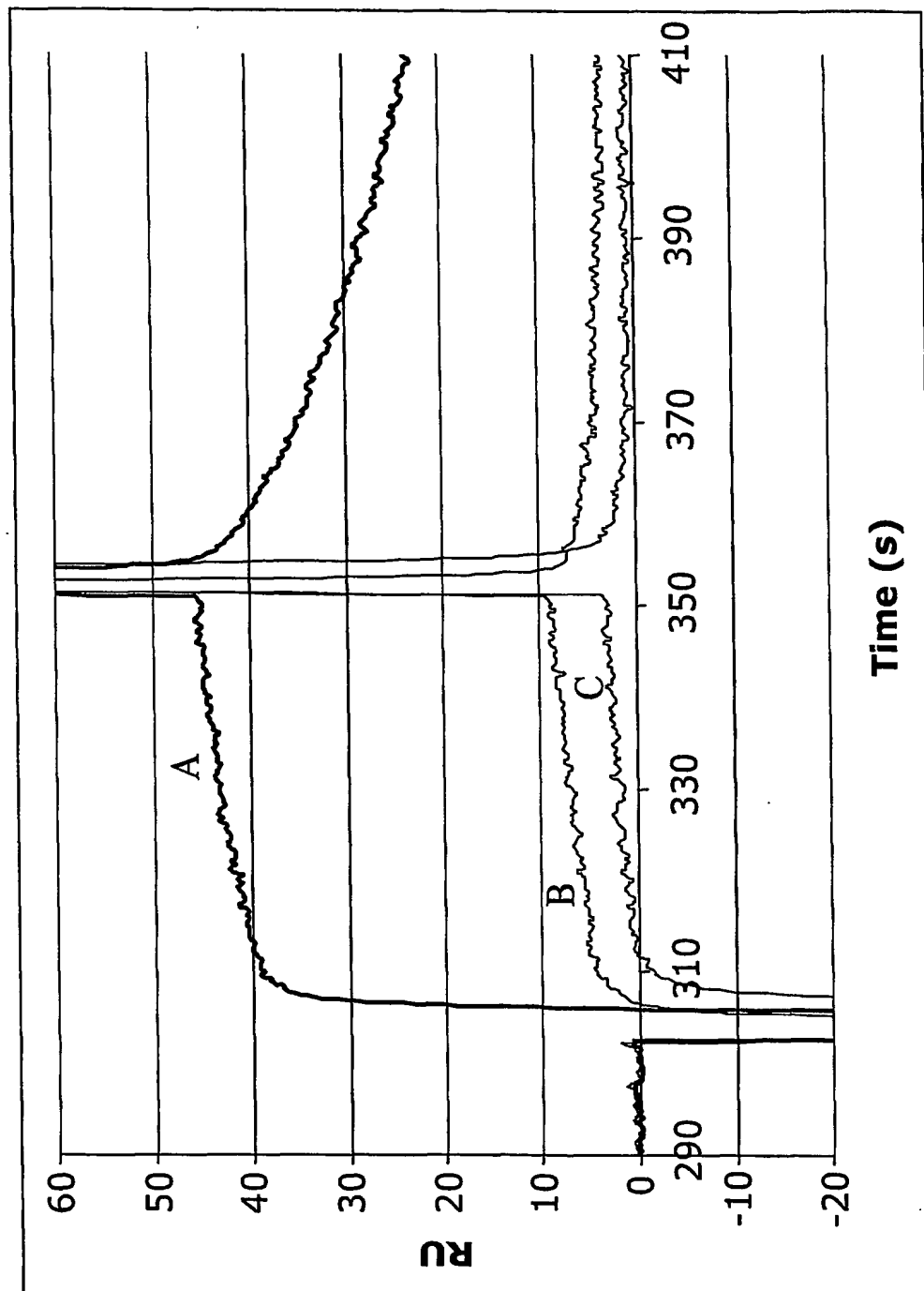


FIGURE 4

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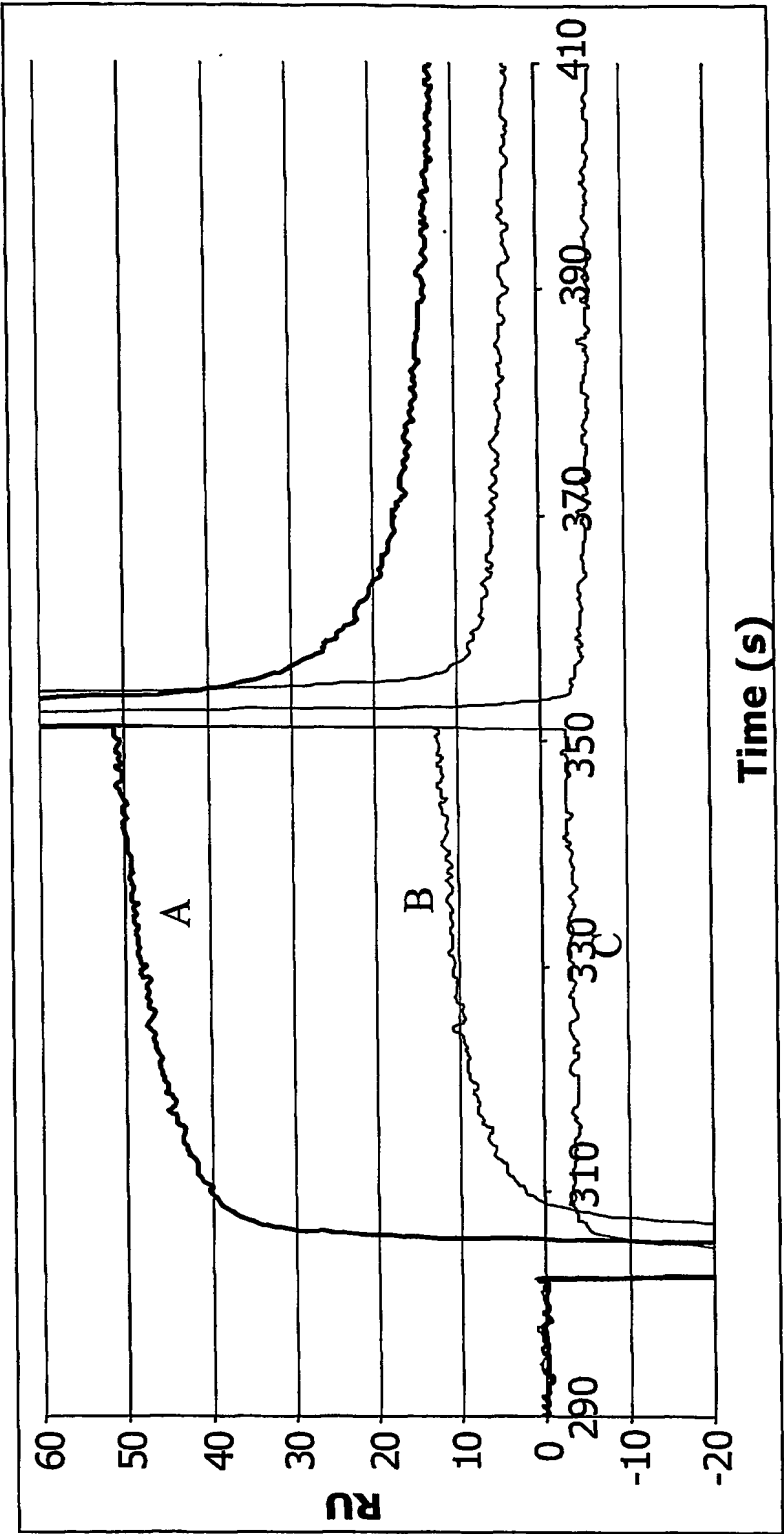
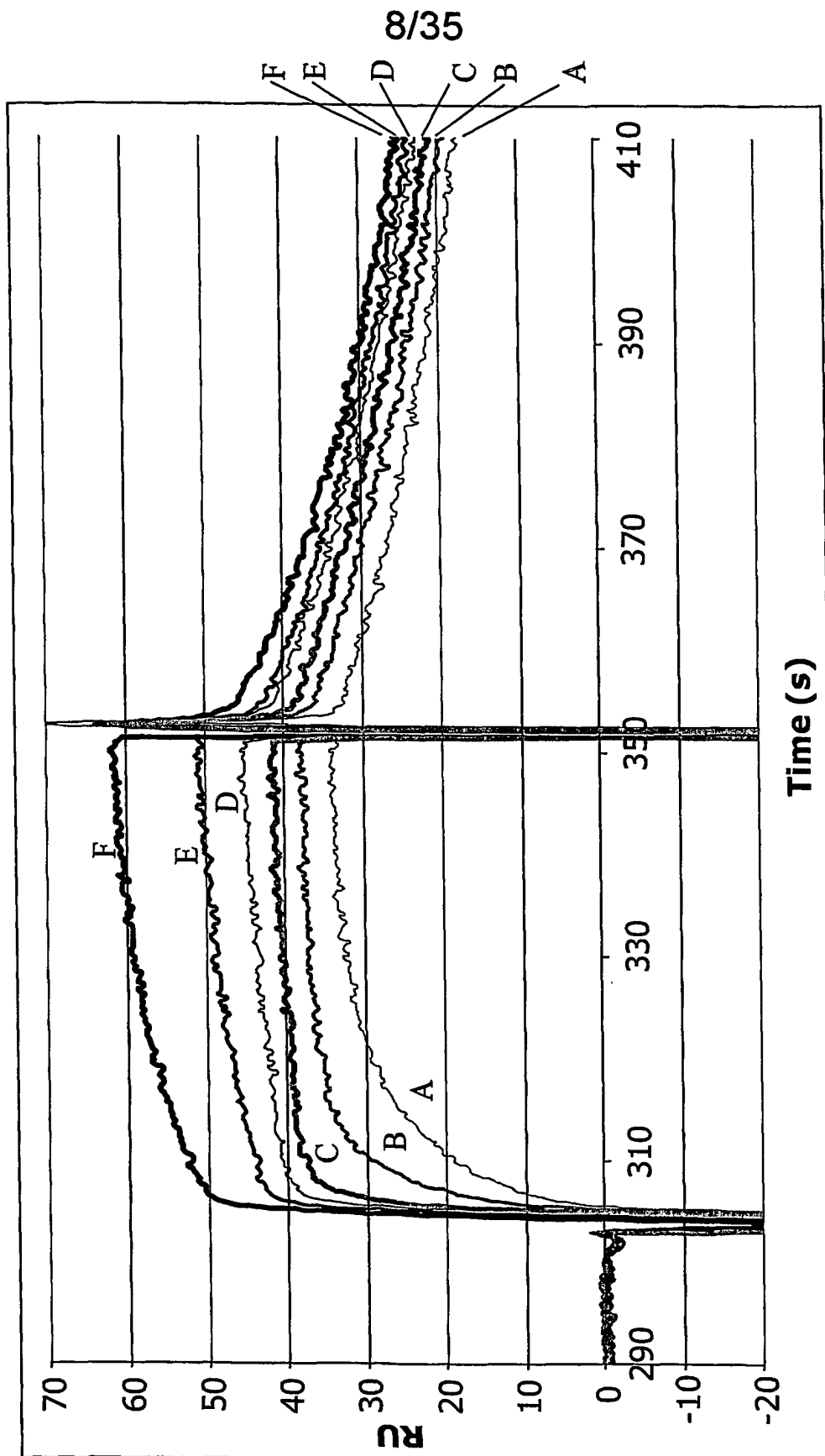


FIGURE 5



**FIGURE 6**



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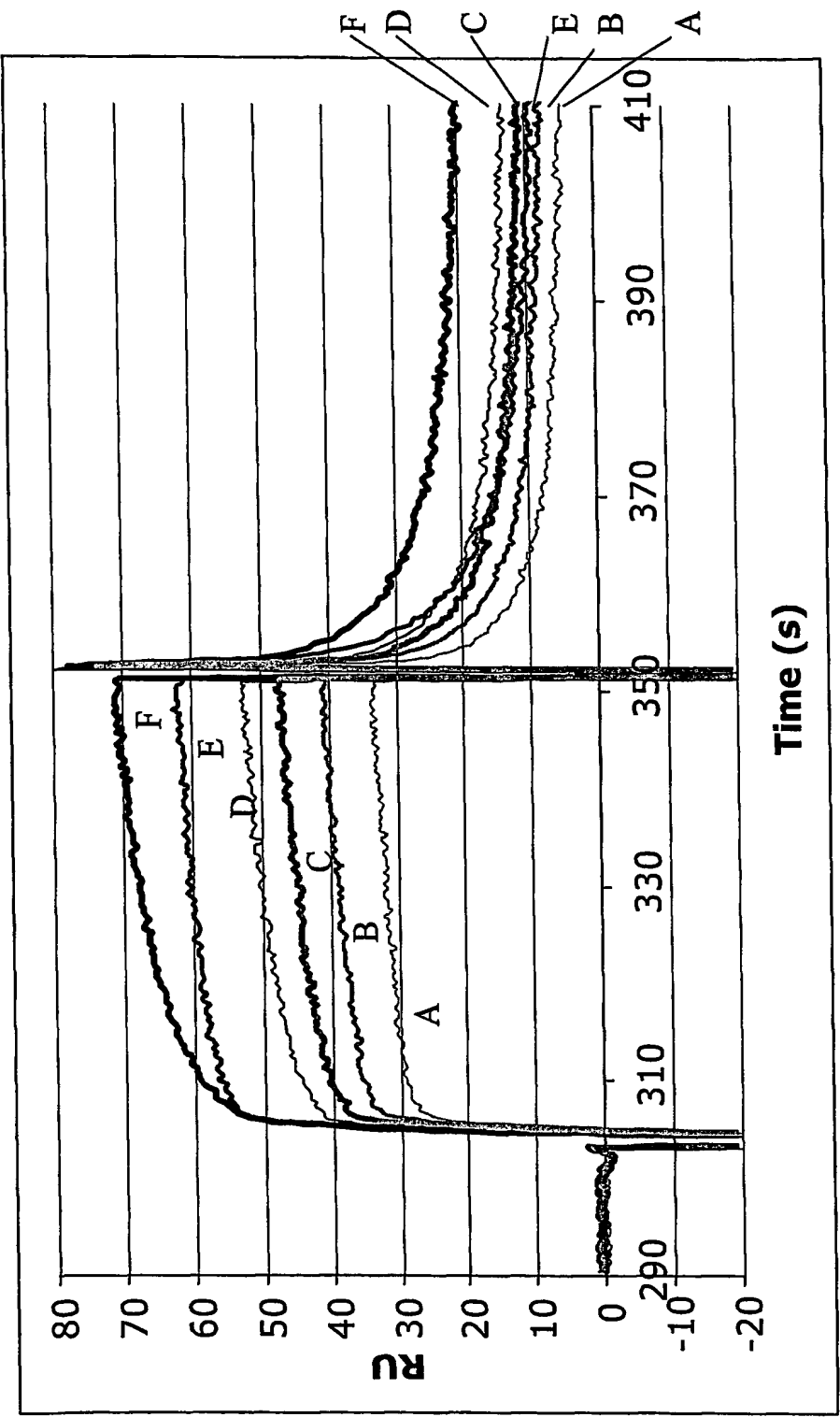


FIGURE 7

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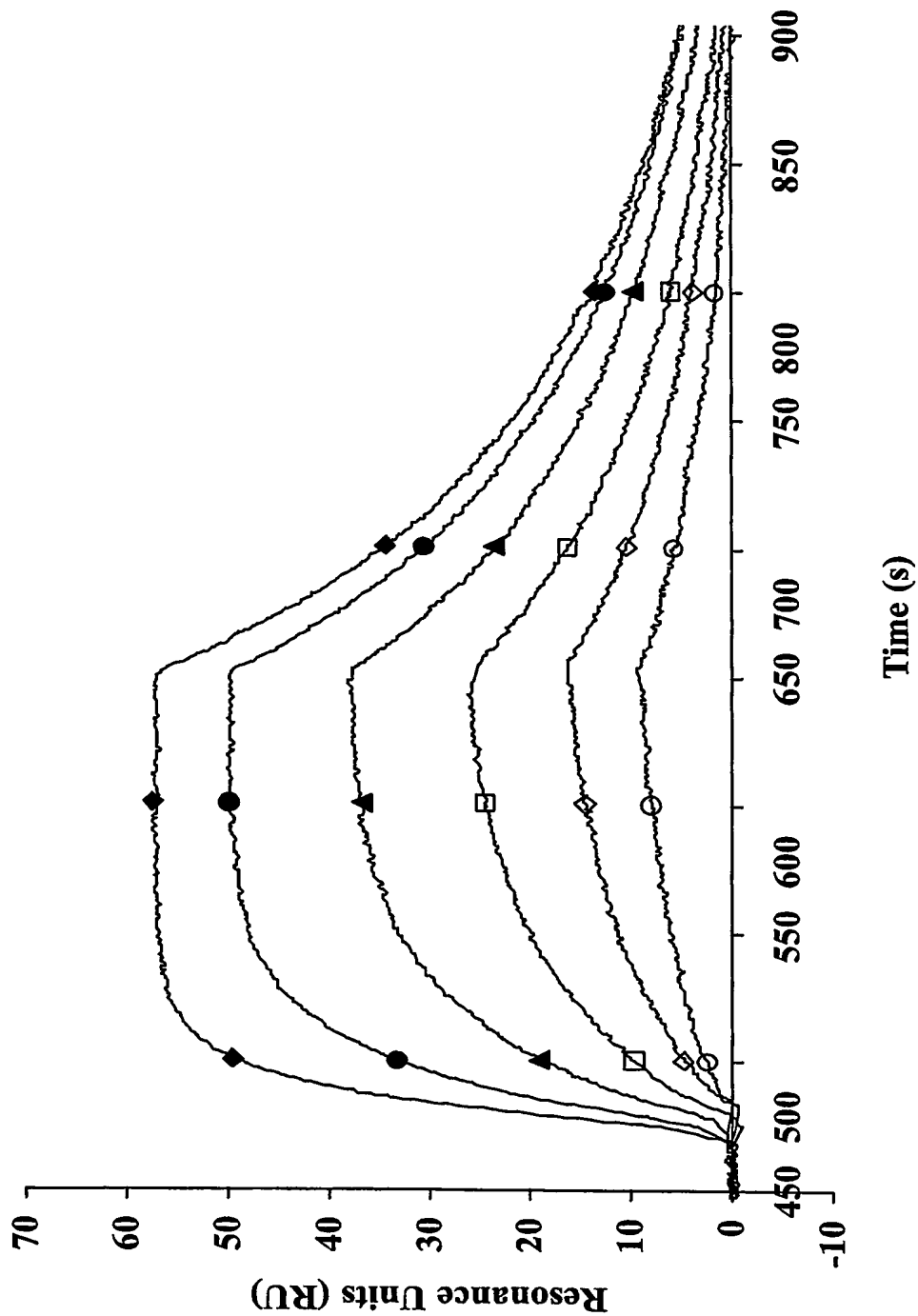


FIGURE 8A

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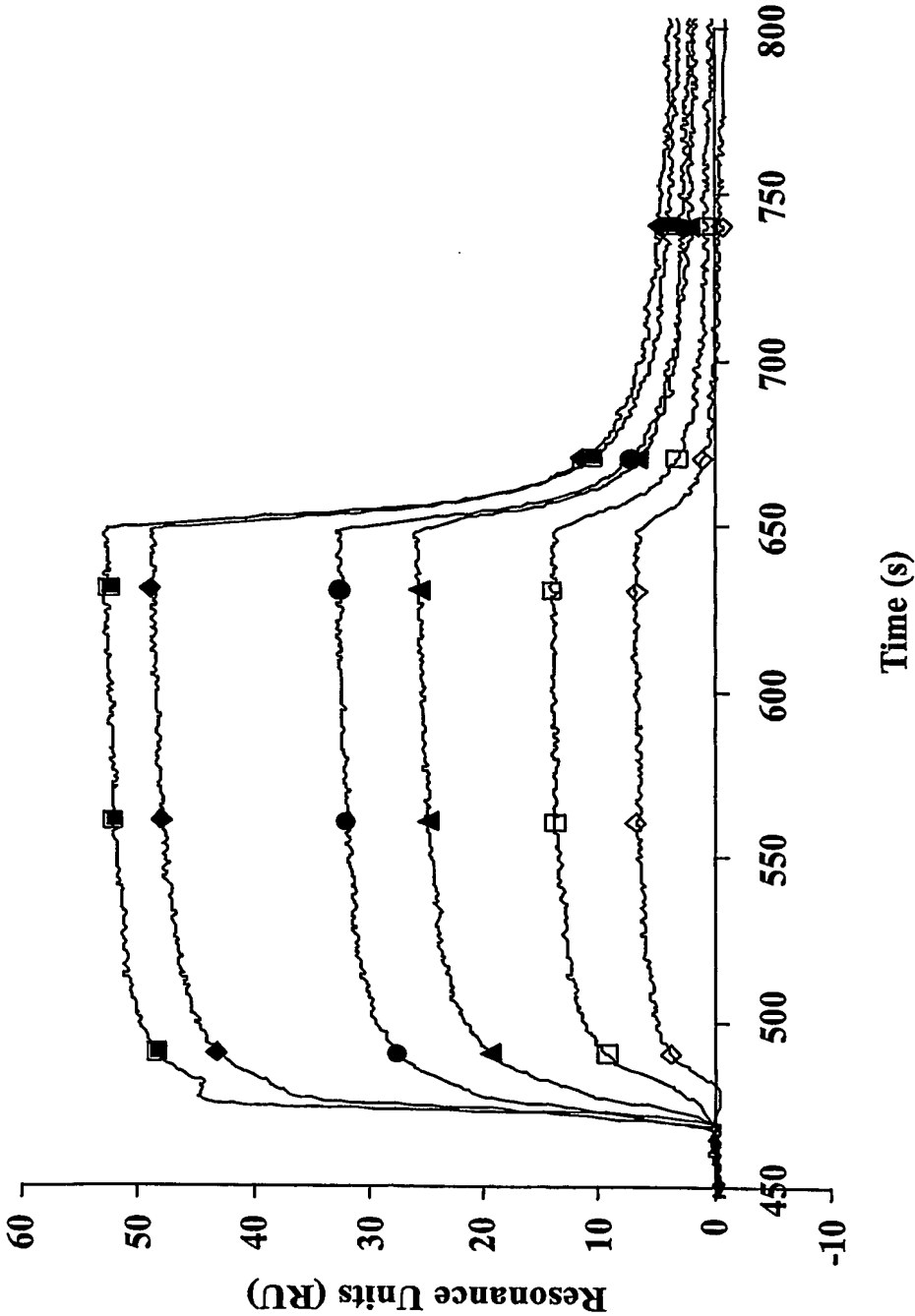
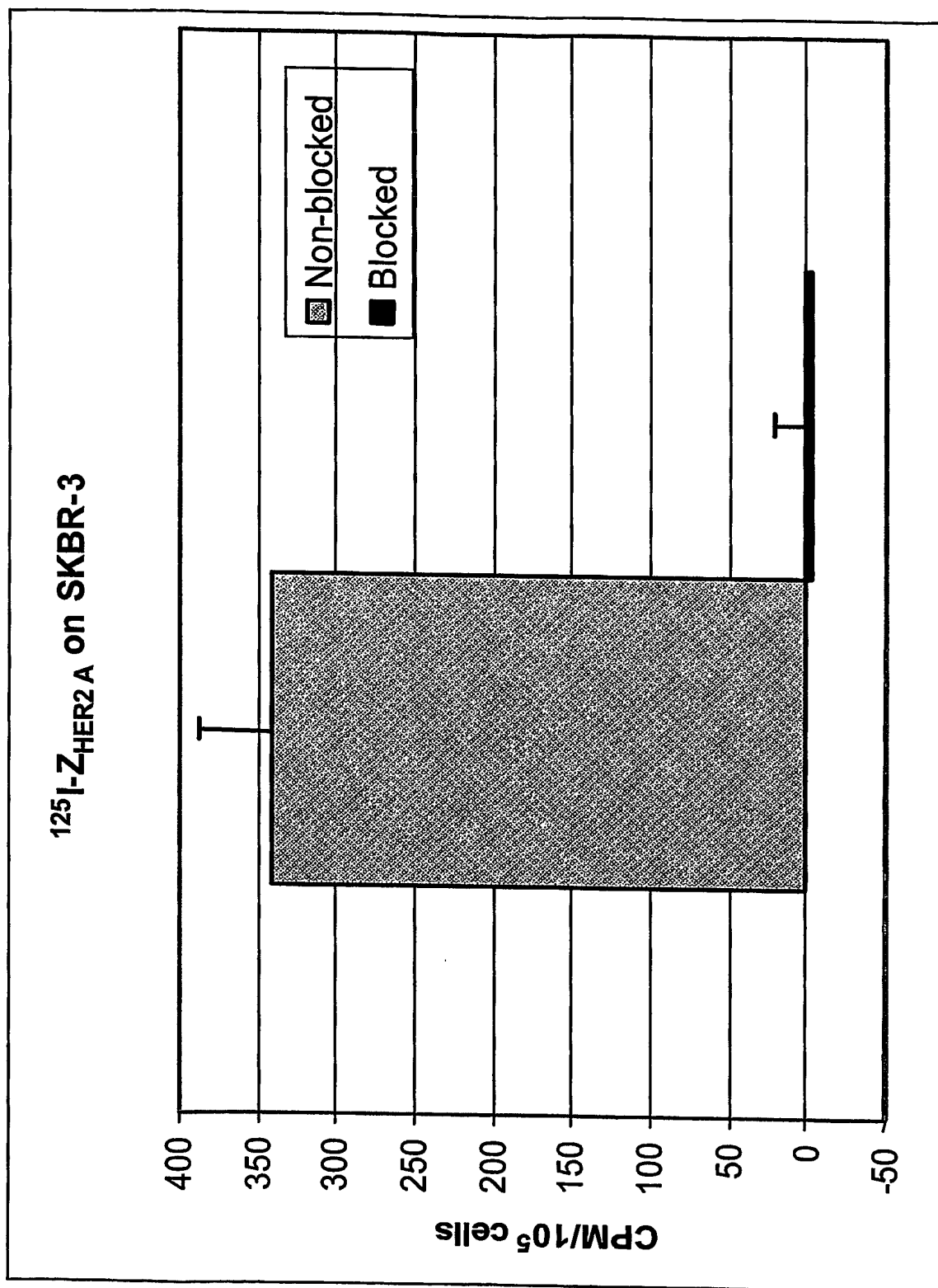


FIGURE 8B

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**FIGURE 9**

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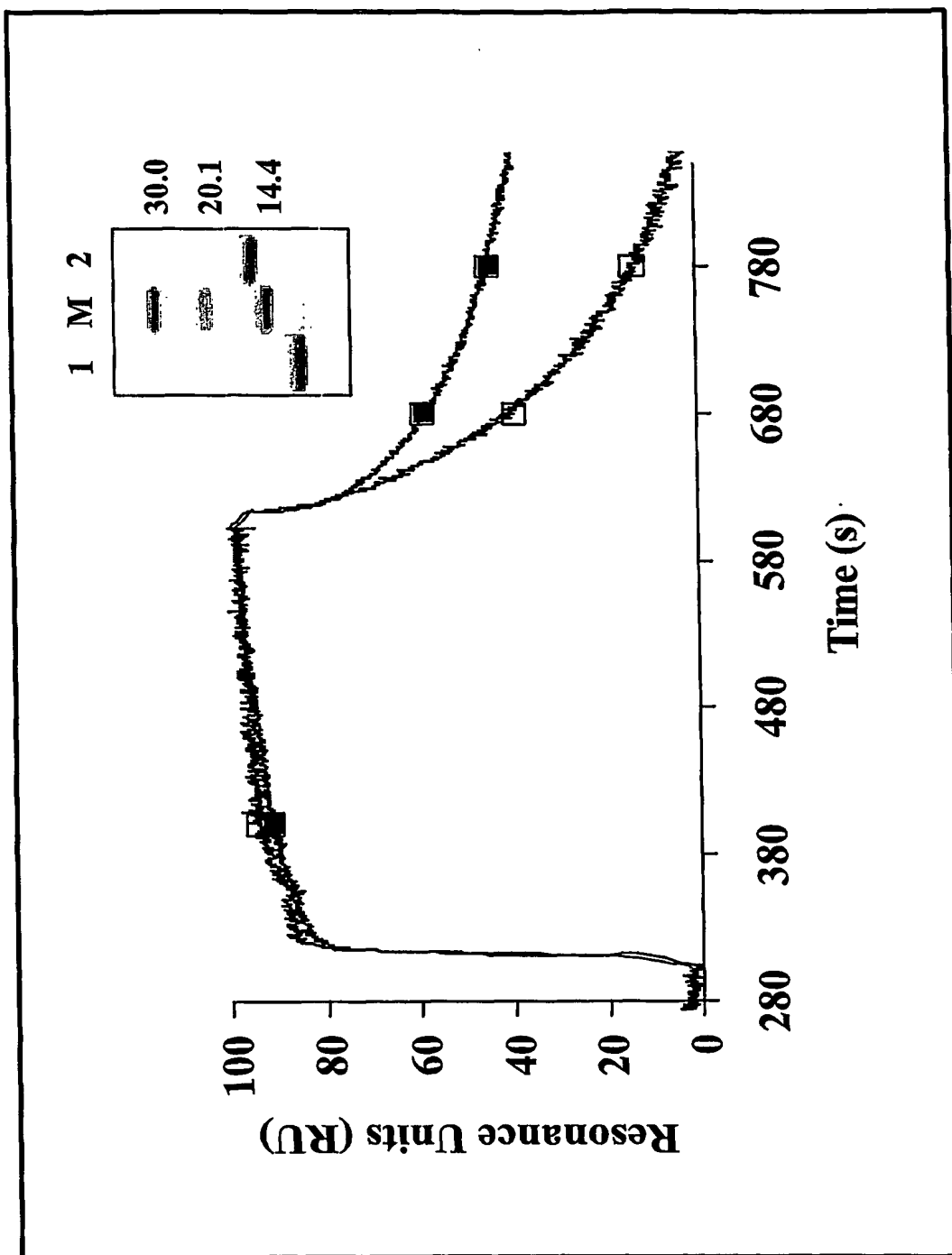
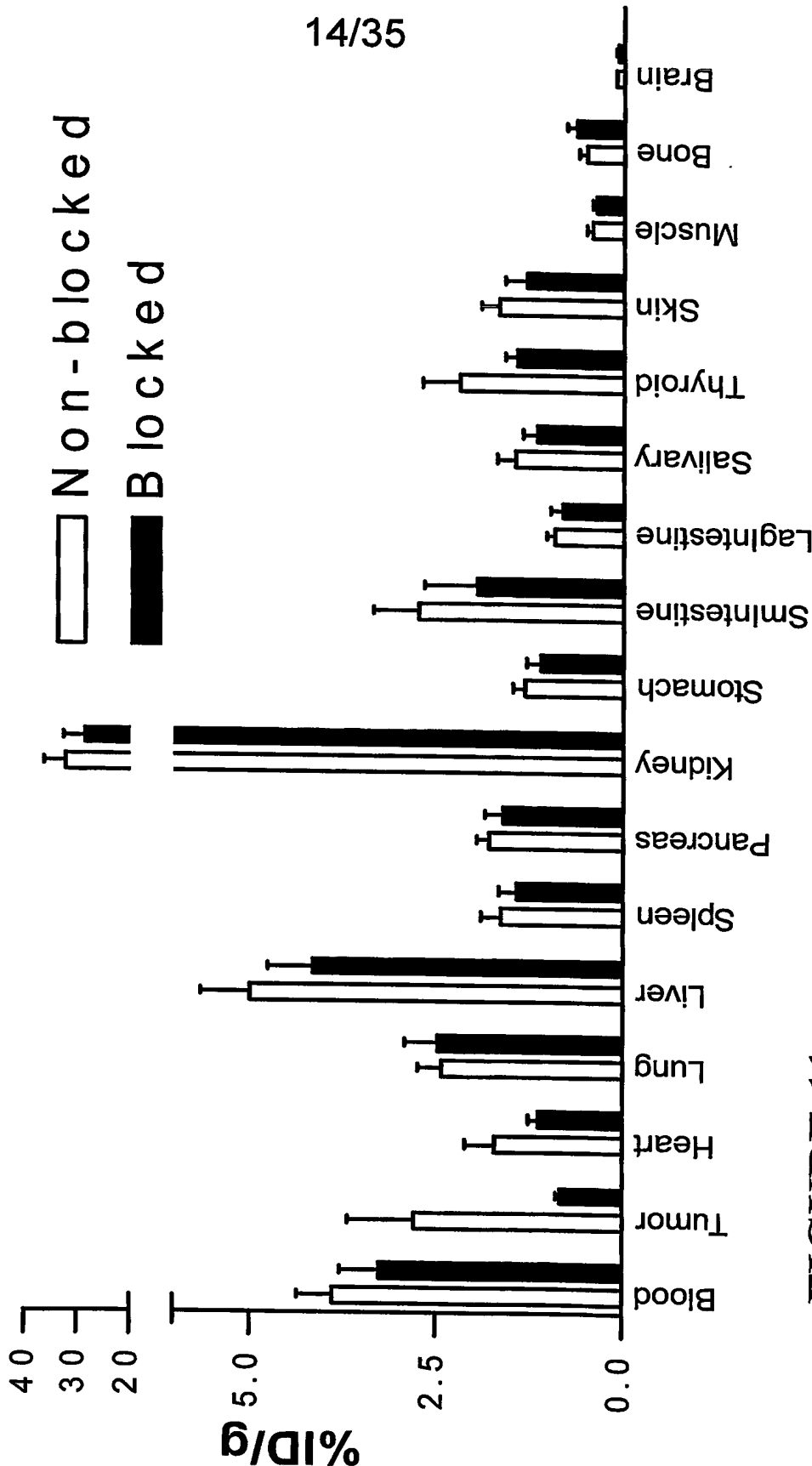


FIGURE 10

**Blocked vs non-blocked**



**FIGURE 11**

Specific vs unspecific affibody

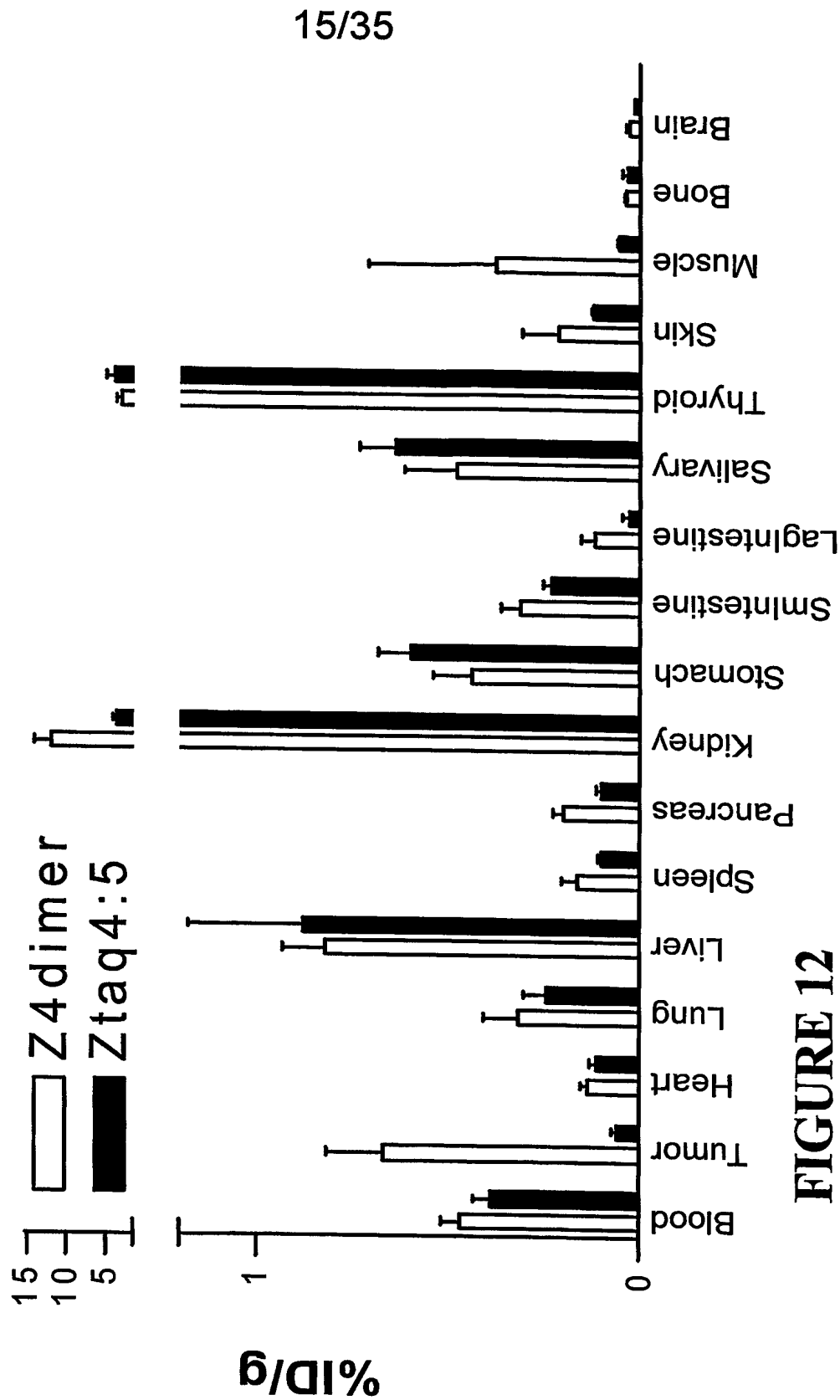
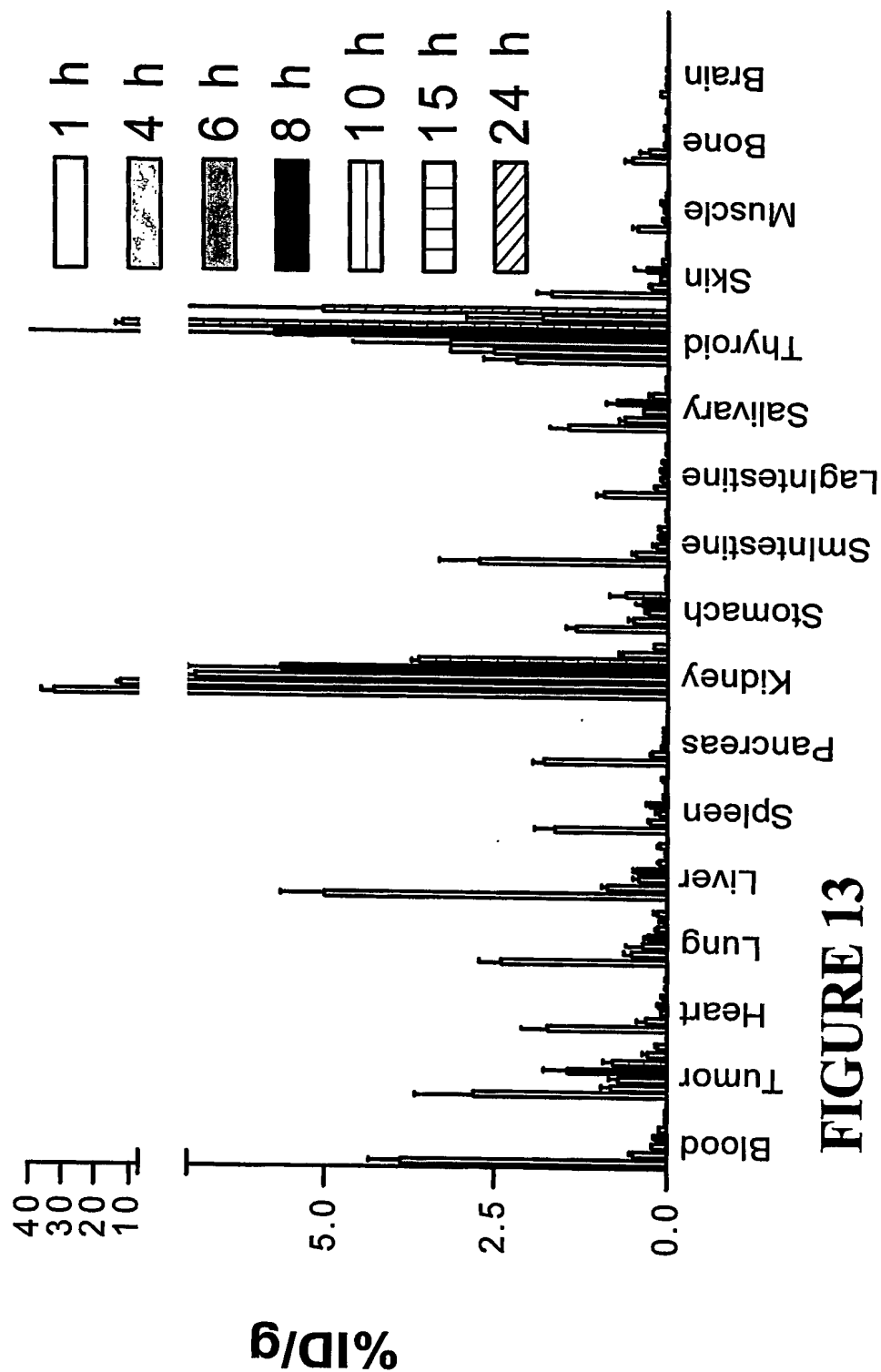


FIGURE 12

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**Biodistribution, combined data****FIGURE 13**



Biodistribution at 8 h ip

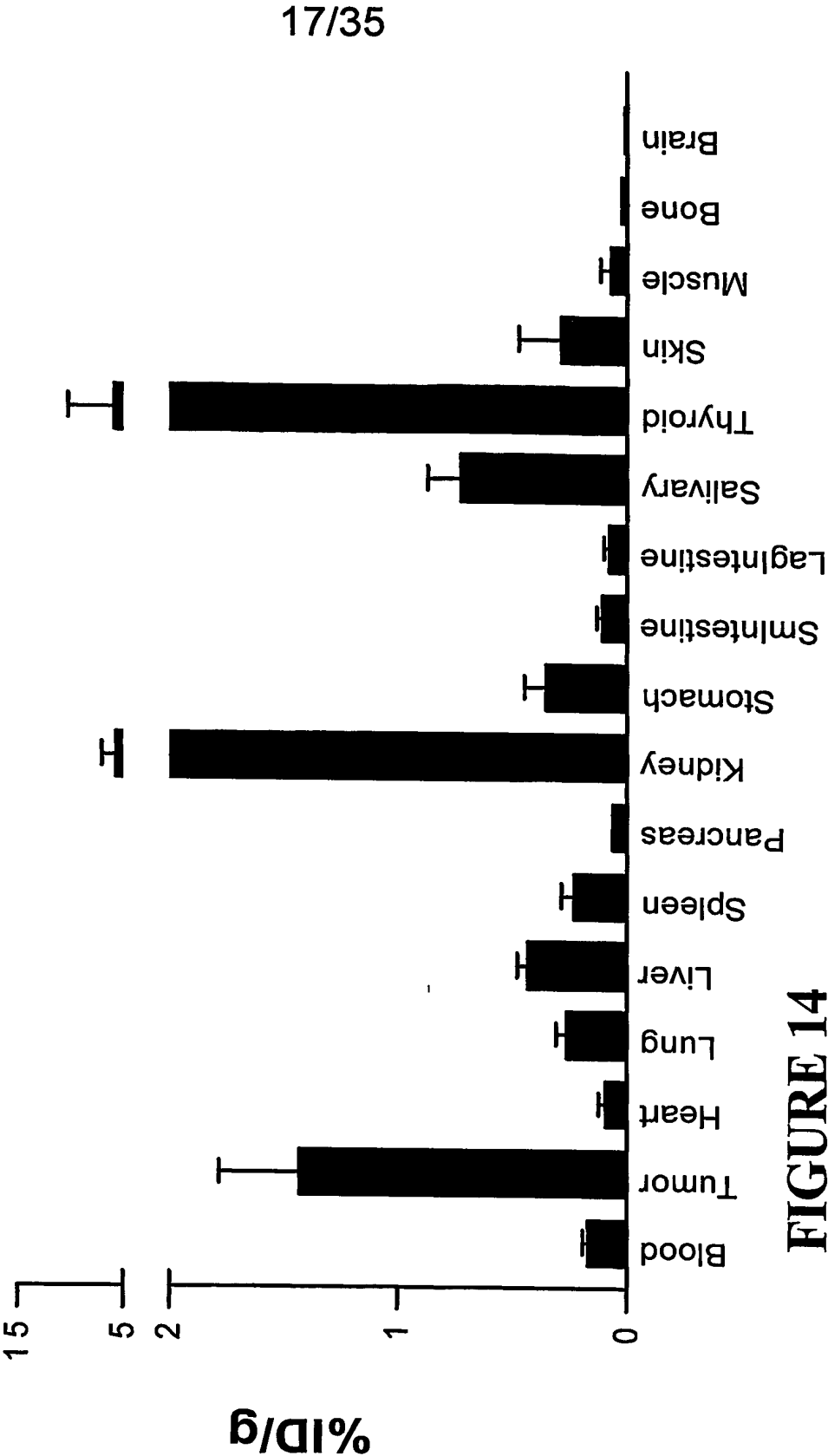


FIGURE 14

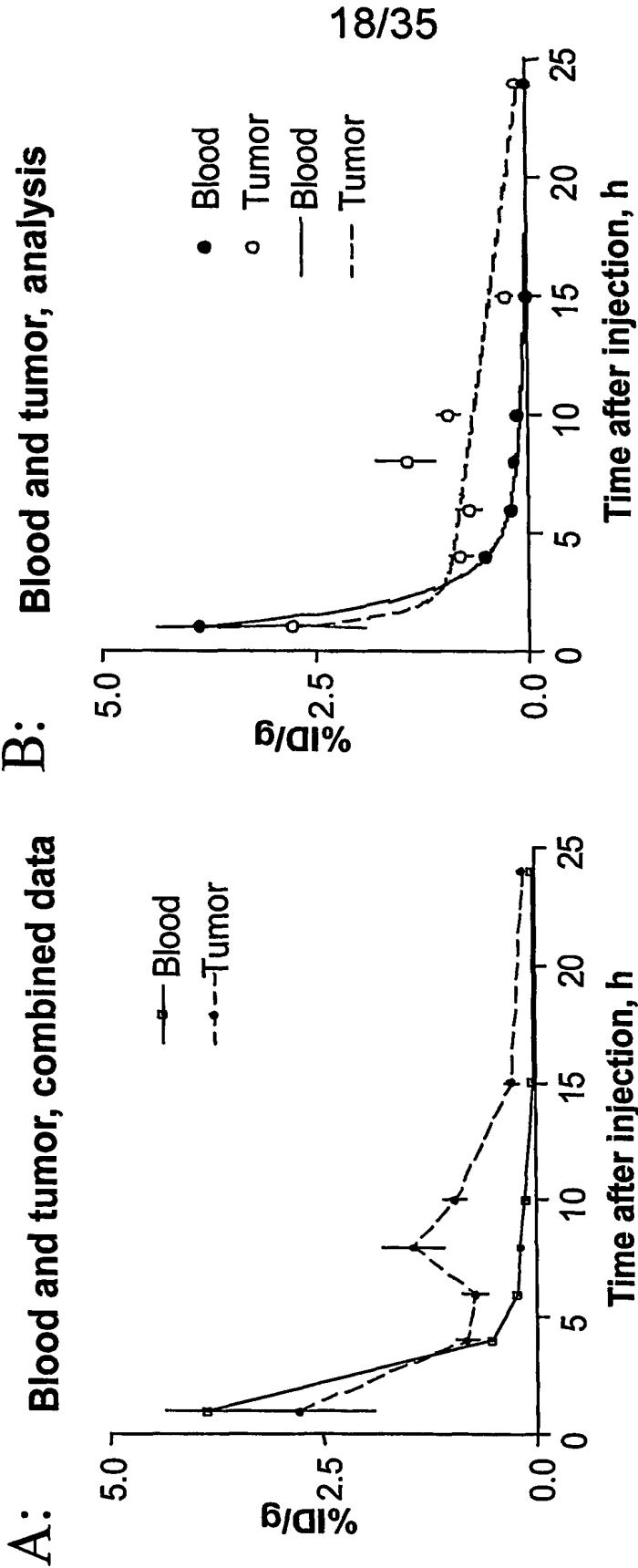
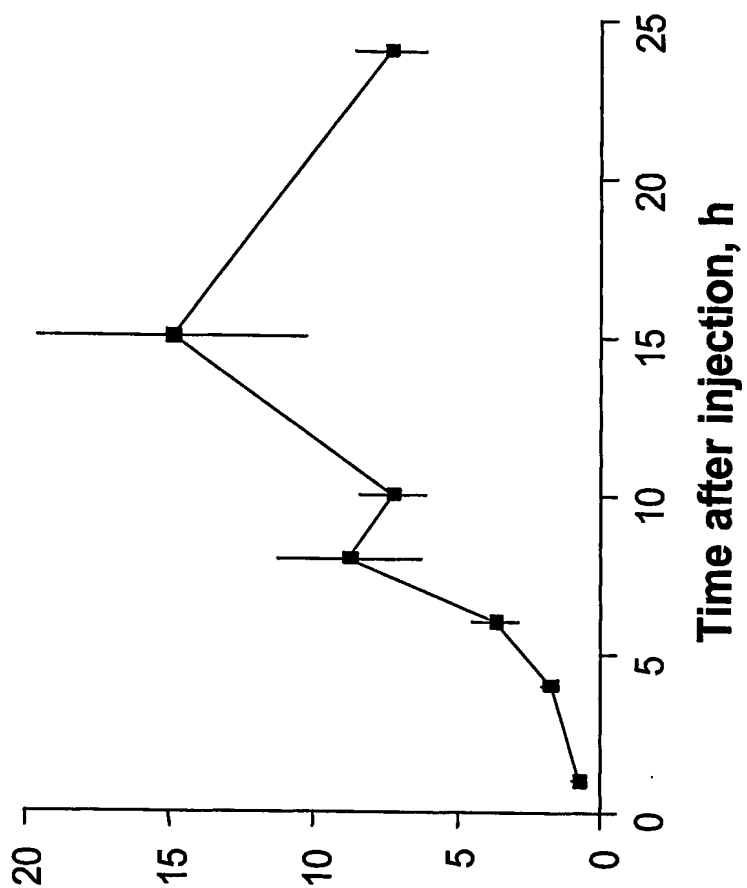


FIGURE 15

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**Tumor to blood ratio, combined data**



**FIGURE 16**

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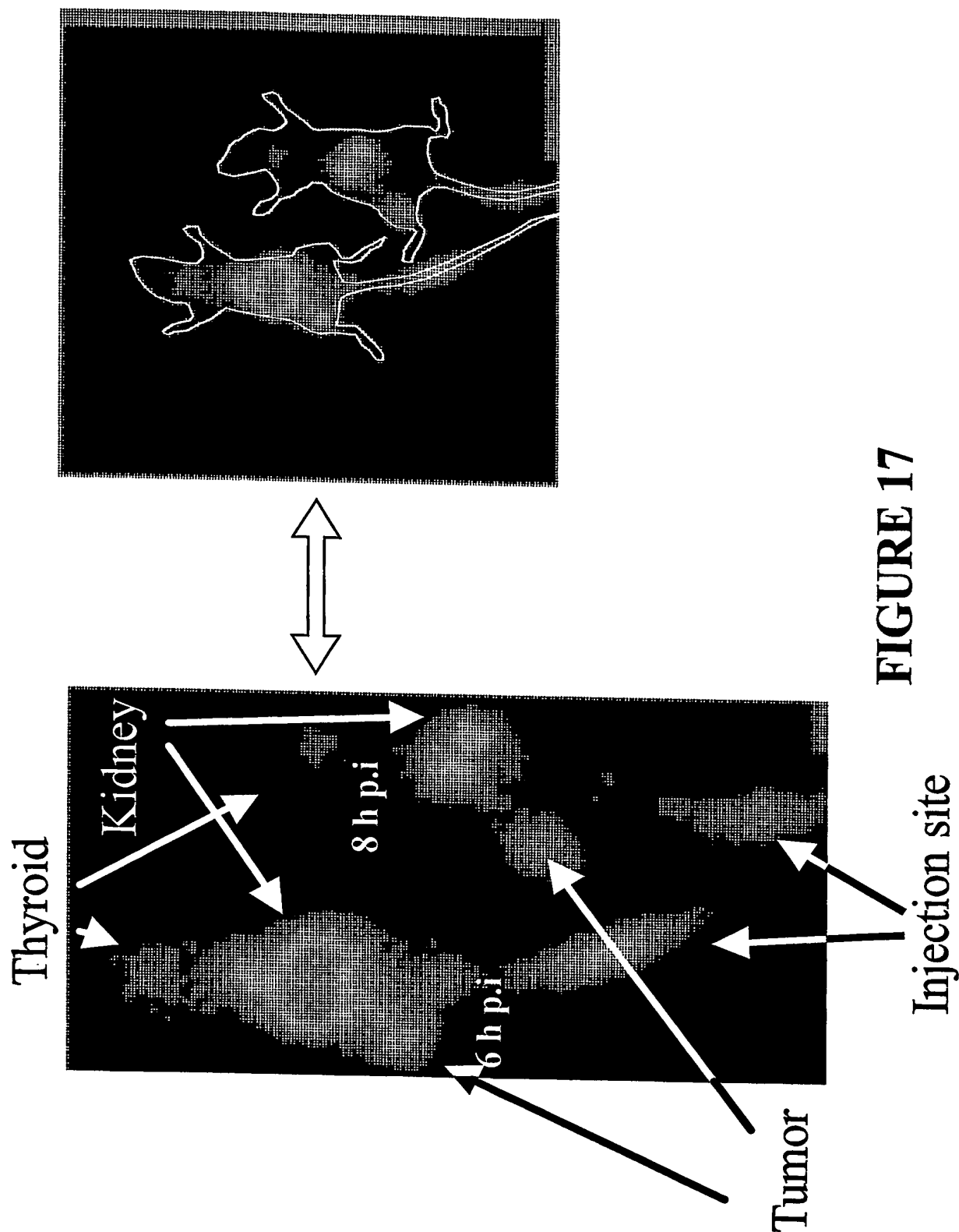


FIGURE 17

Biodistribution of Z<sub>HER2 A</sub> 4 hours

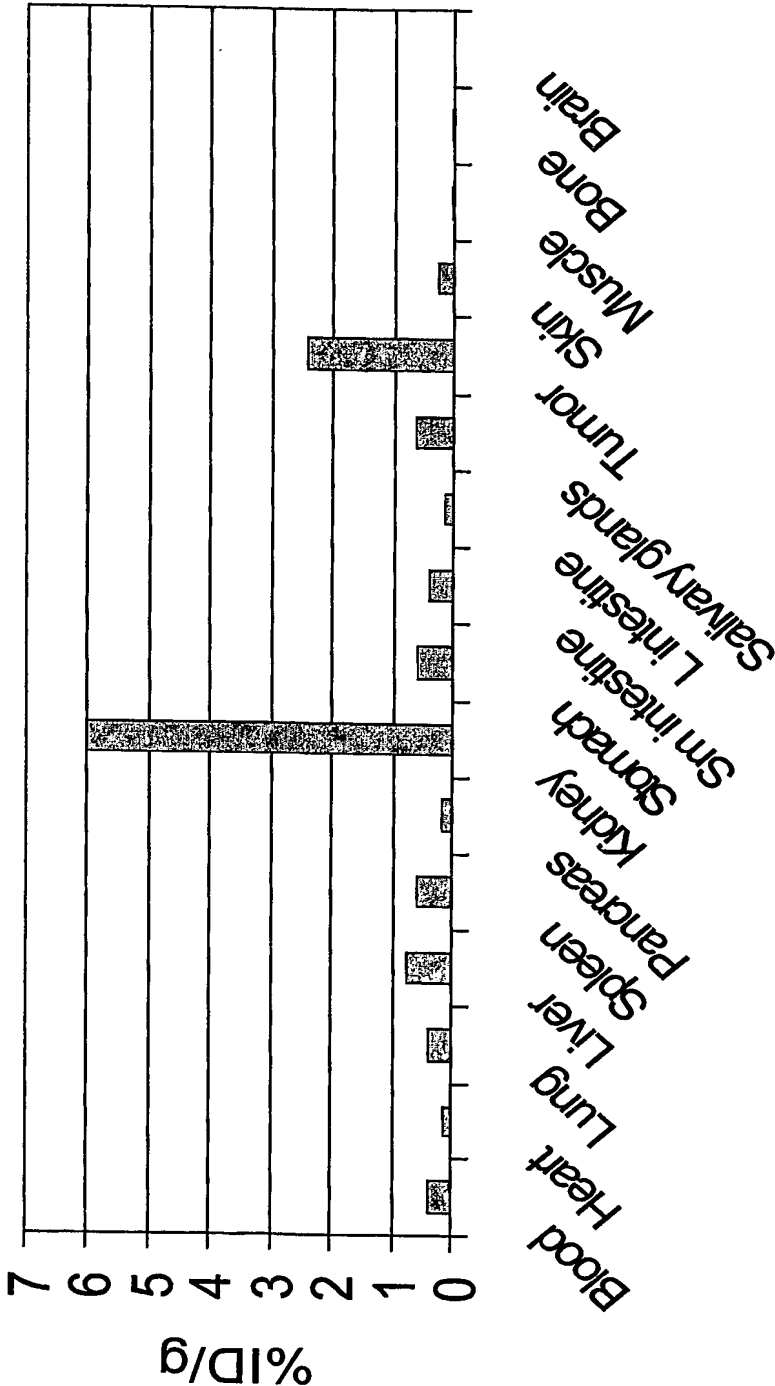


FIGURE 18

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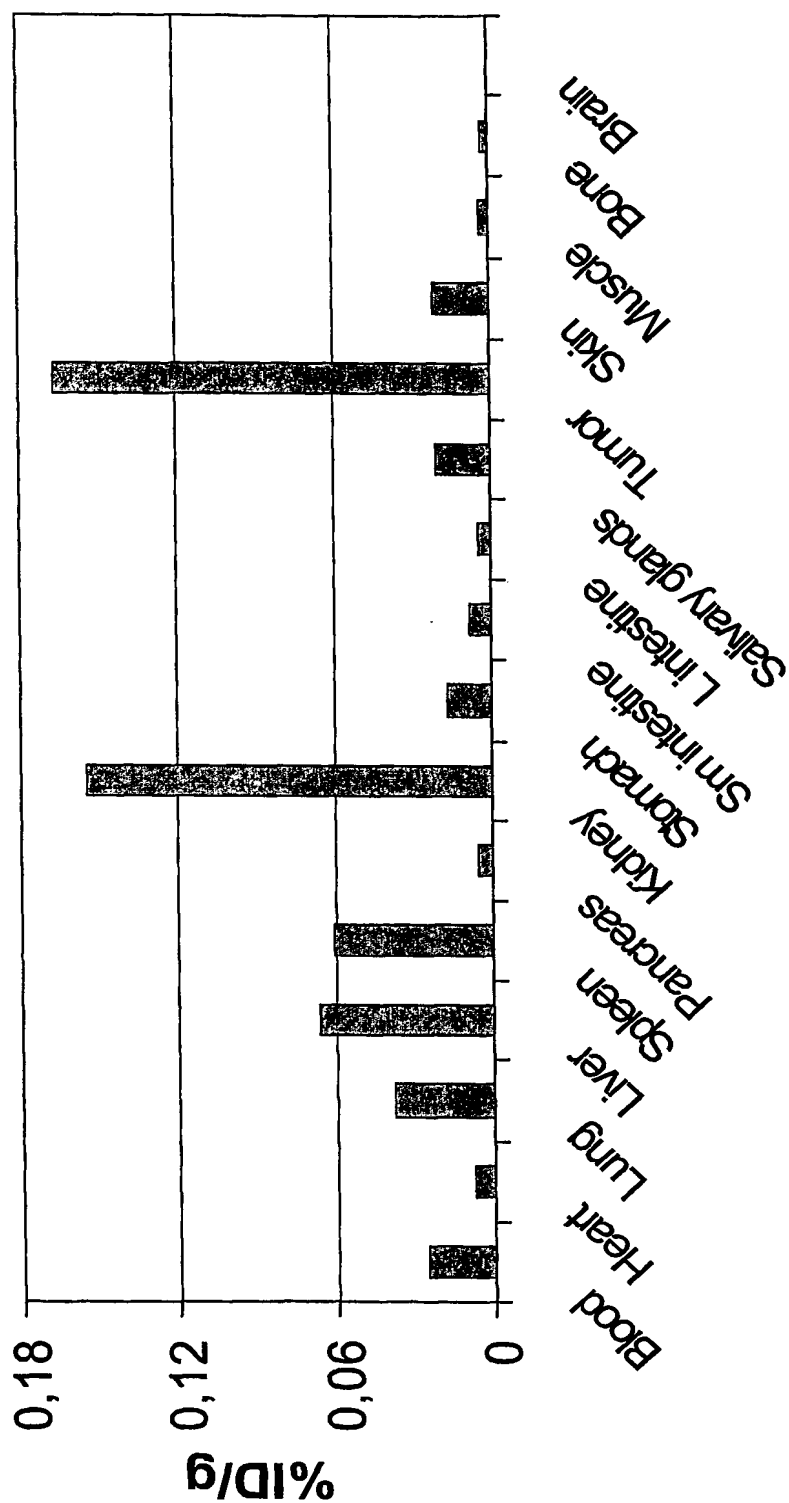
Biodistribution of Z<sub>HER2</sub>A, 24 hours

FIGURE 19

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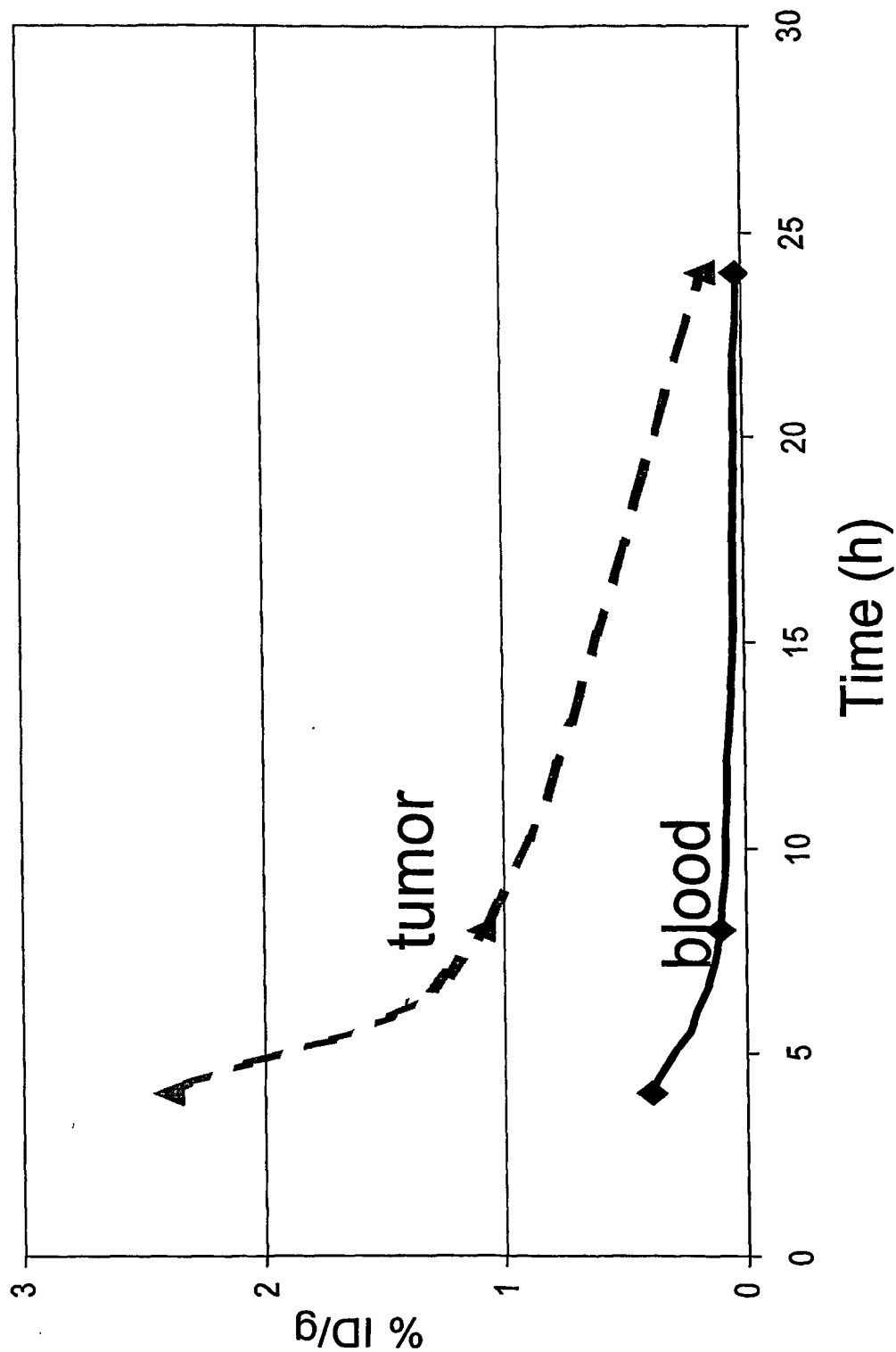


FIGURE 20

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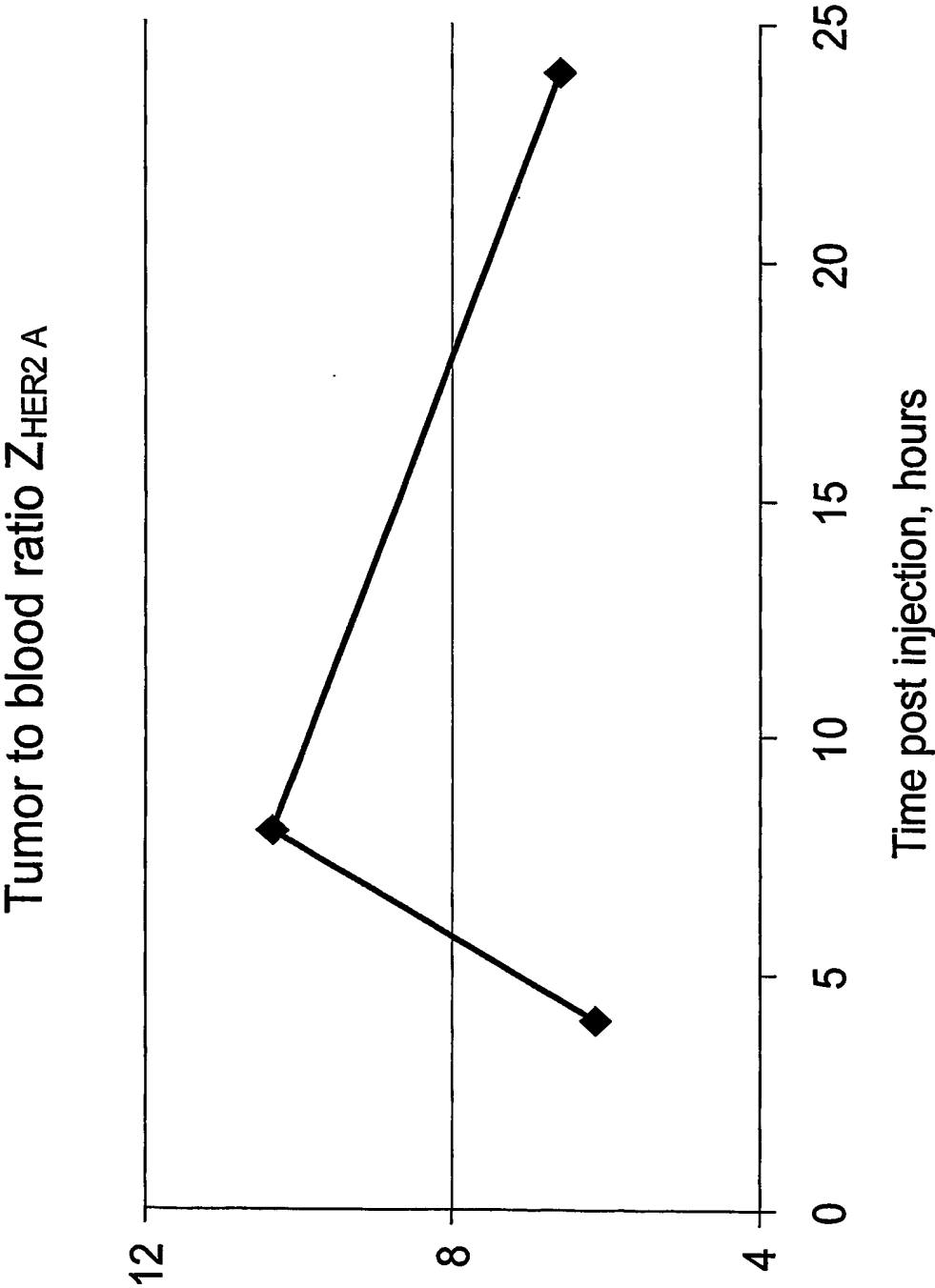


FIGURE 21



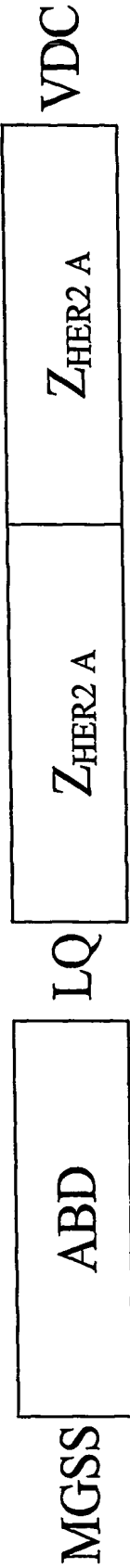


FIGURE 22

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Biodistribution ABD(Z<sub>HER2</sub> A)<sub>2</sub>, 12 and 24 hours

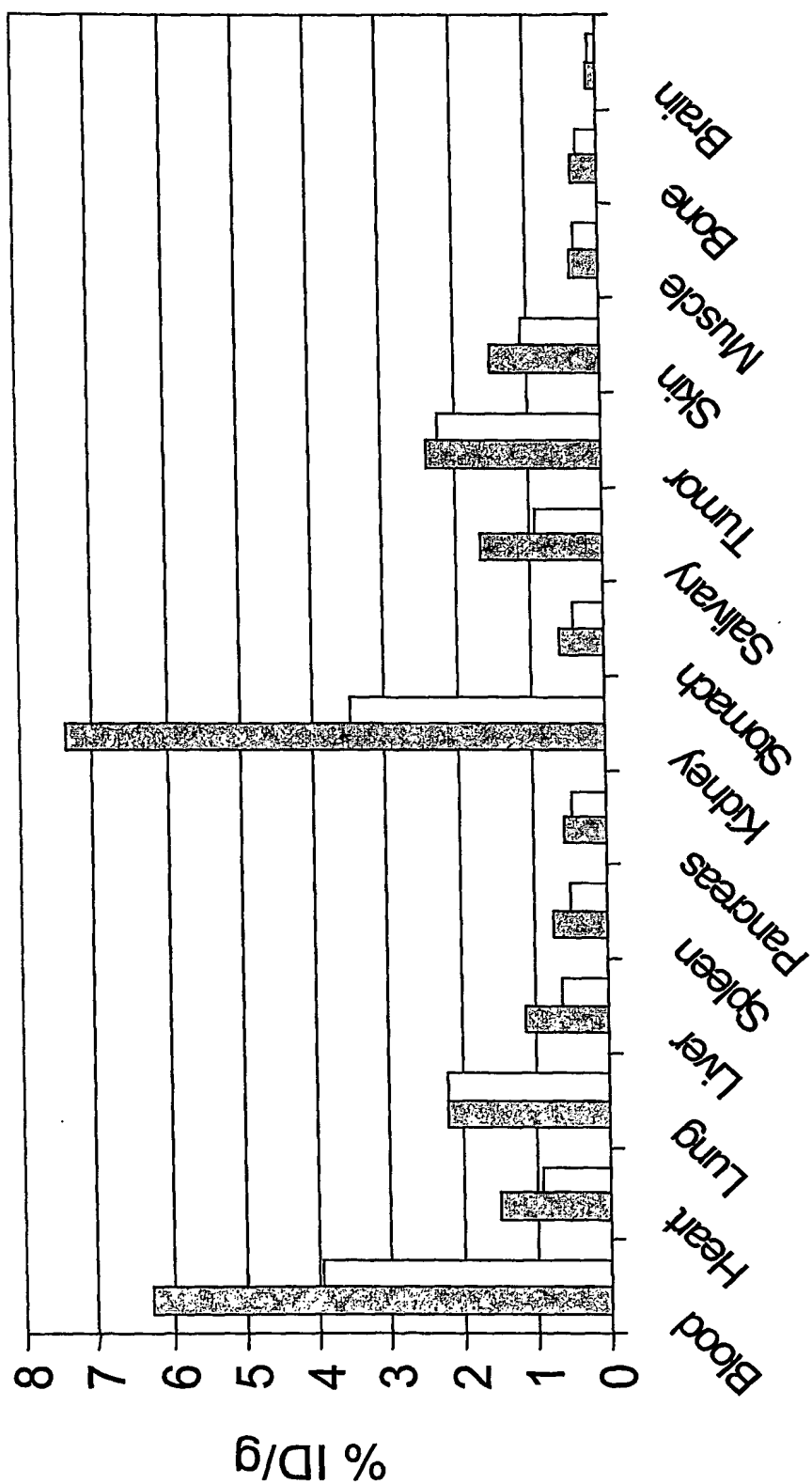


FIGURE 23

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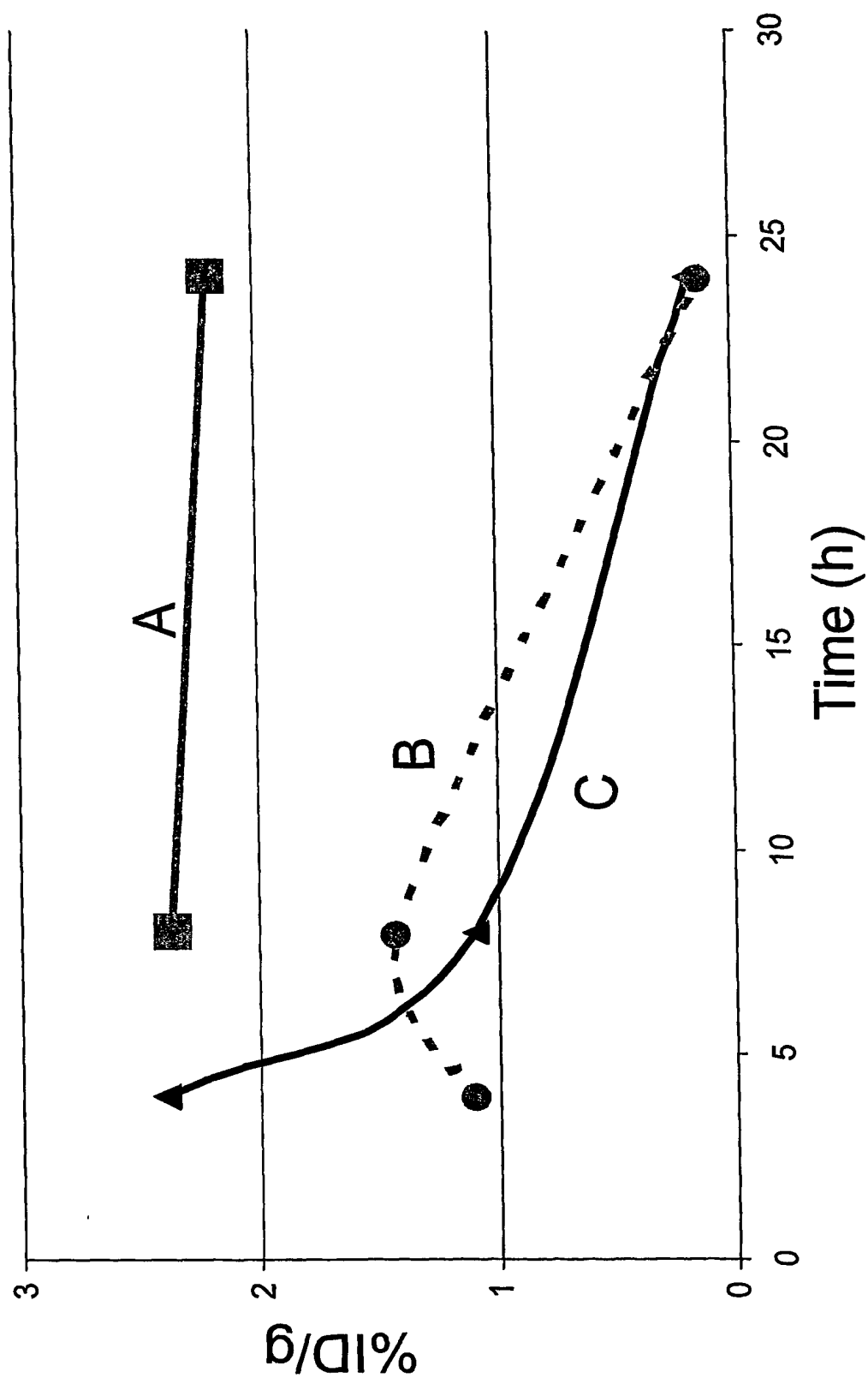
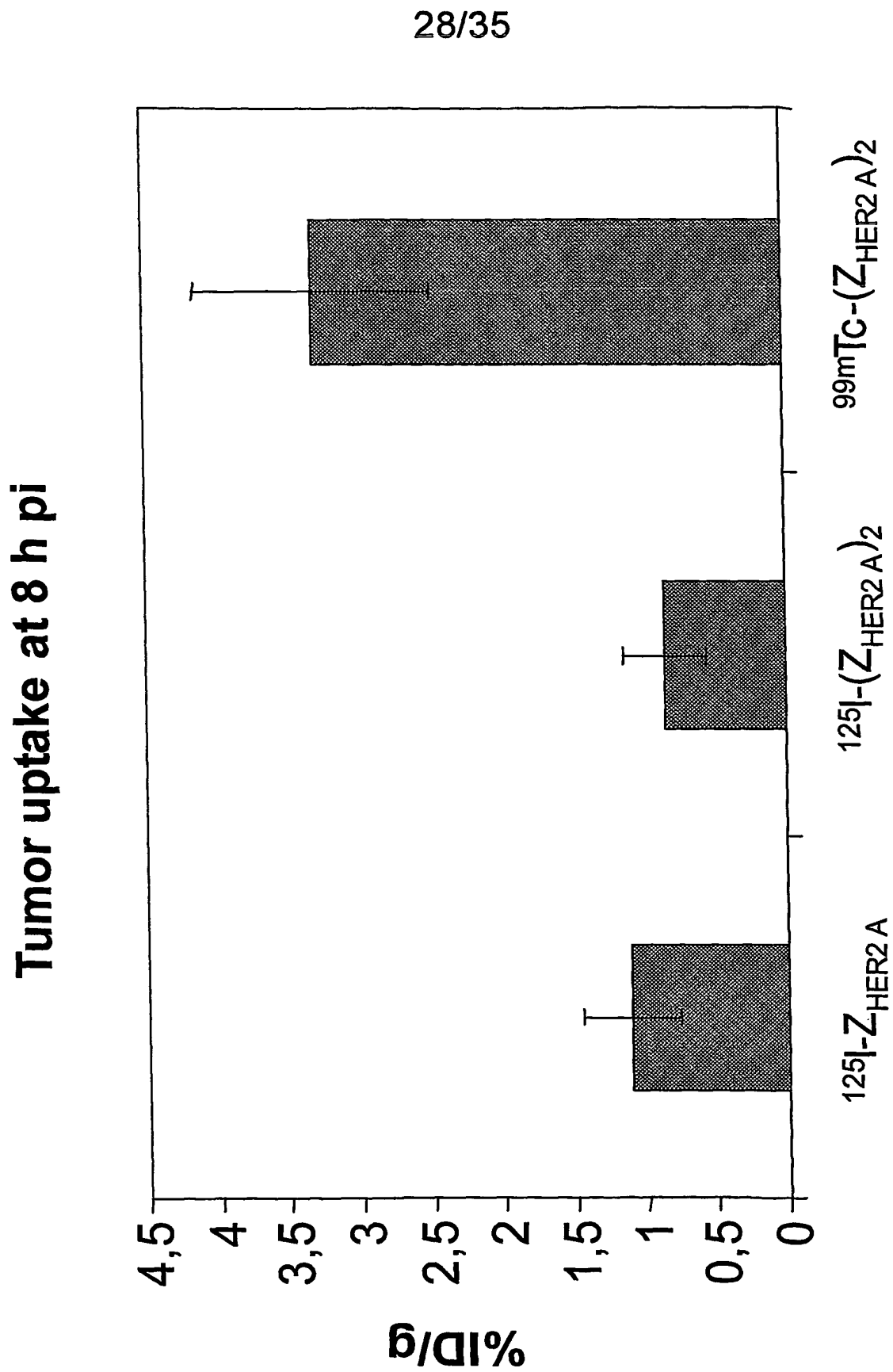


FIGURE 24

**FIGURE 25**

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$^{99m}\text{Tc}-(\text{Z}_{\text{HER2 A}})_2$ , 8 hours

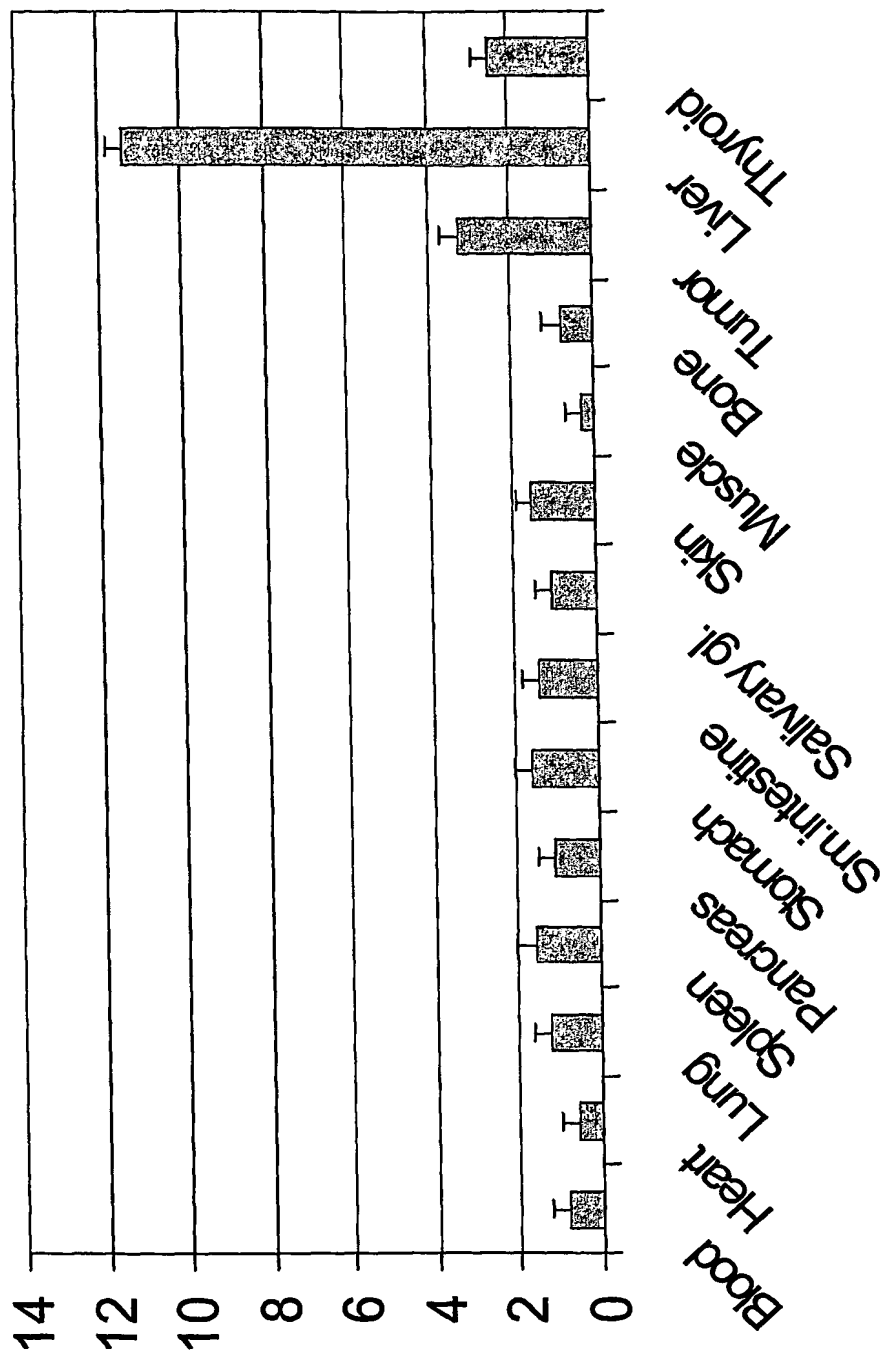


FIGURE 26

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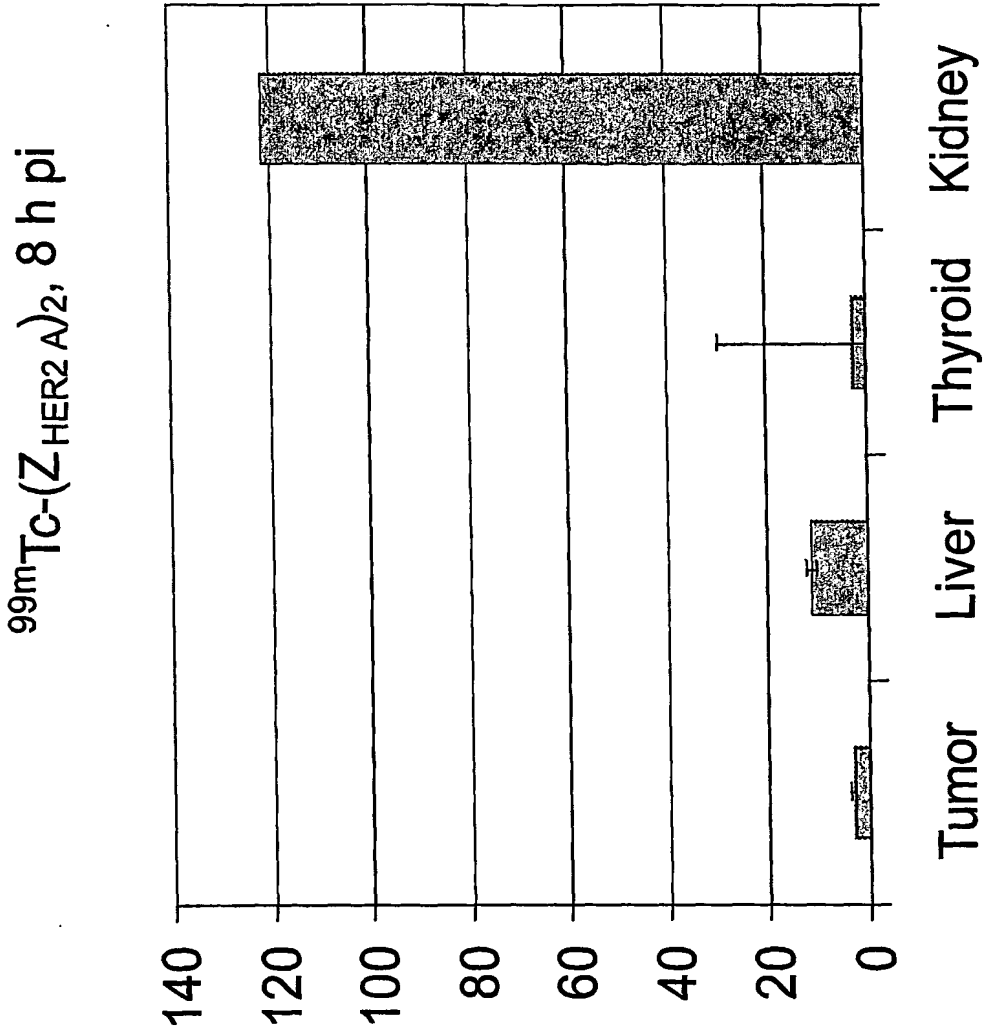


FIGURE 27

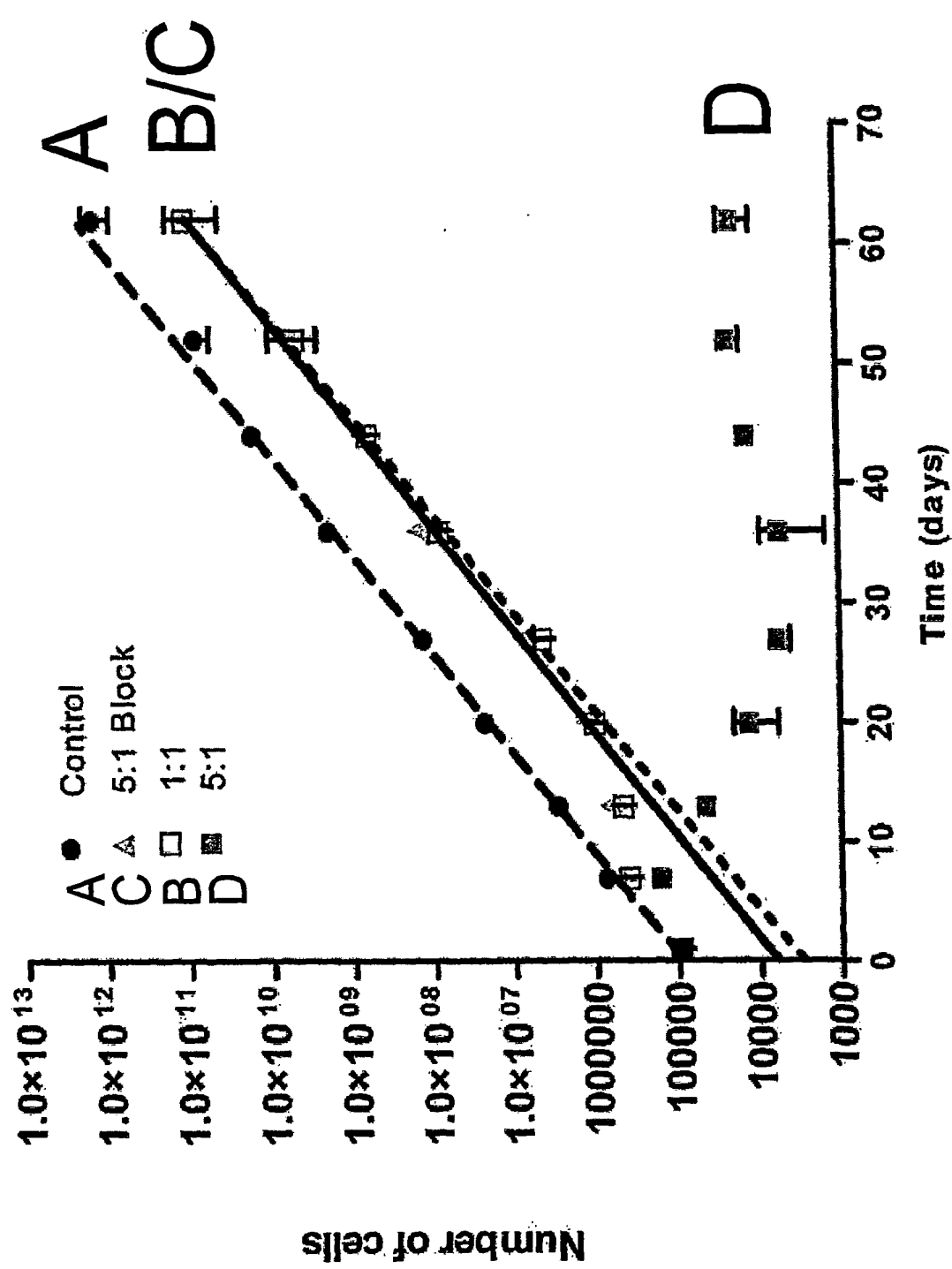


FIGURE 28

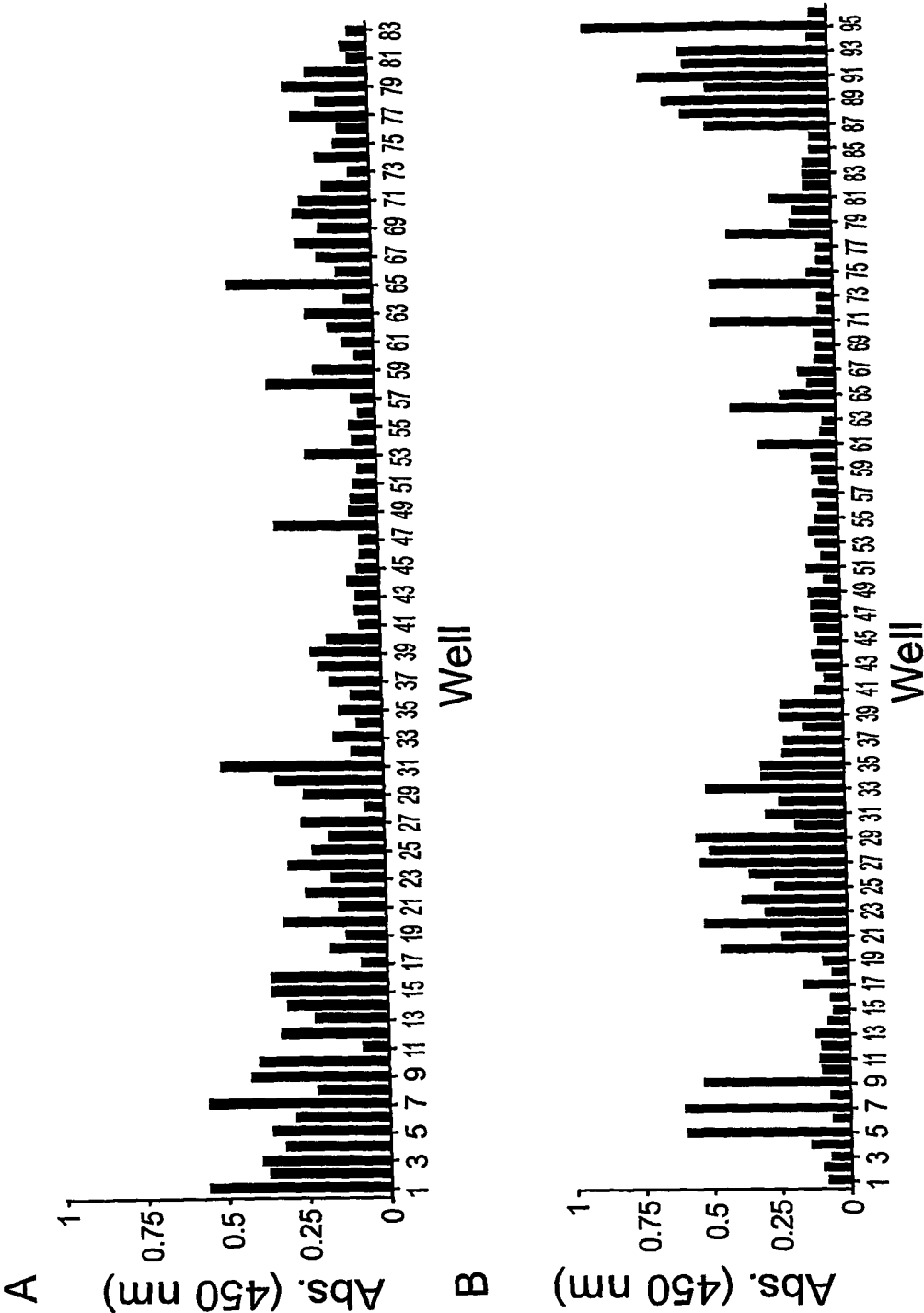


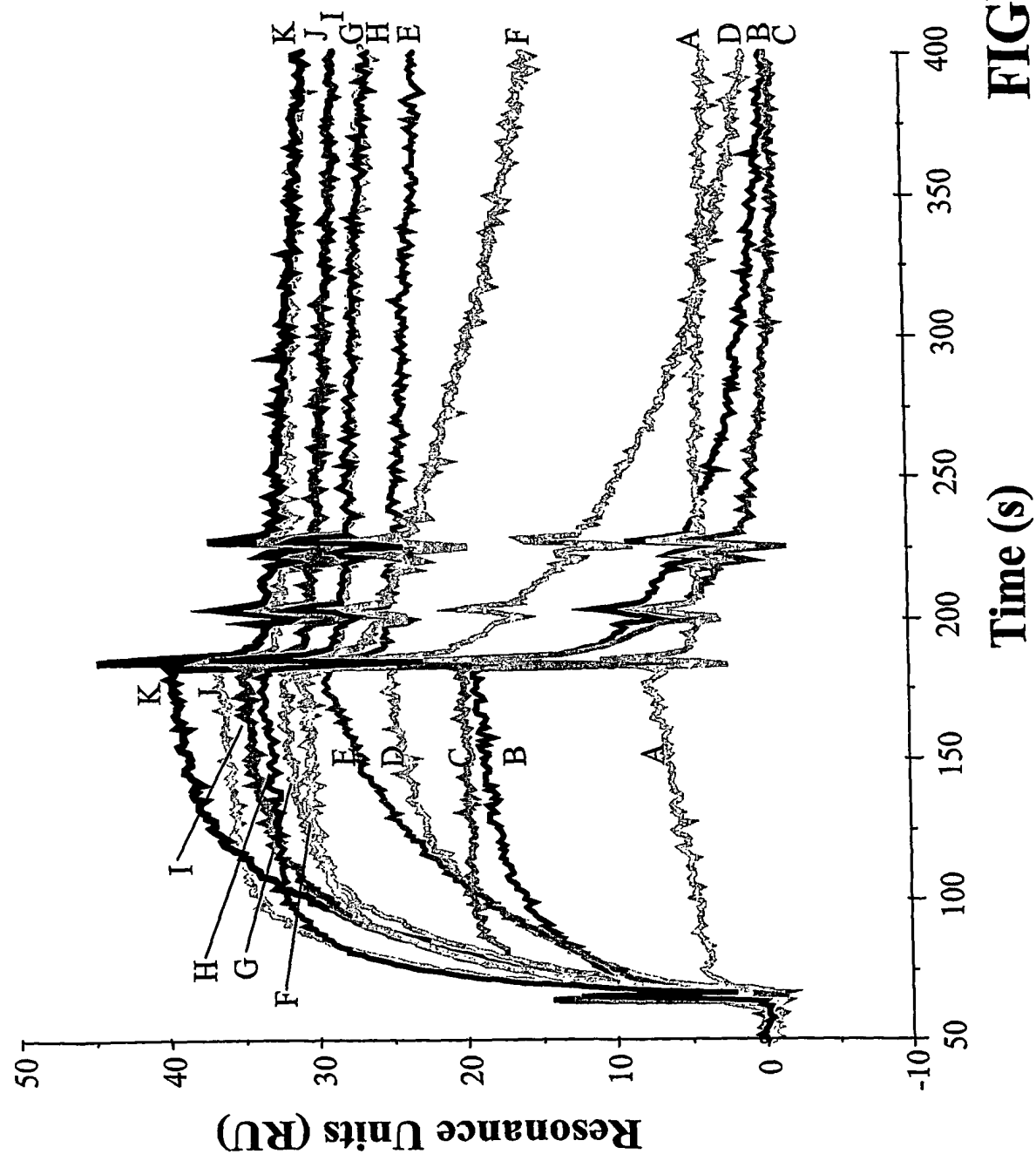
FIGURE 29



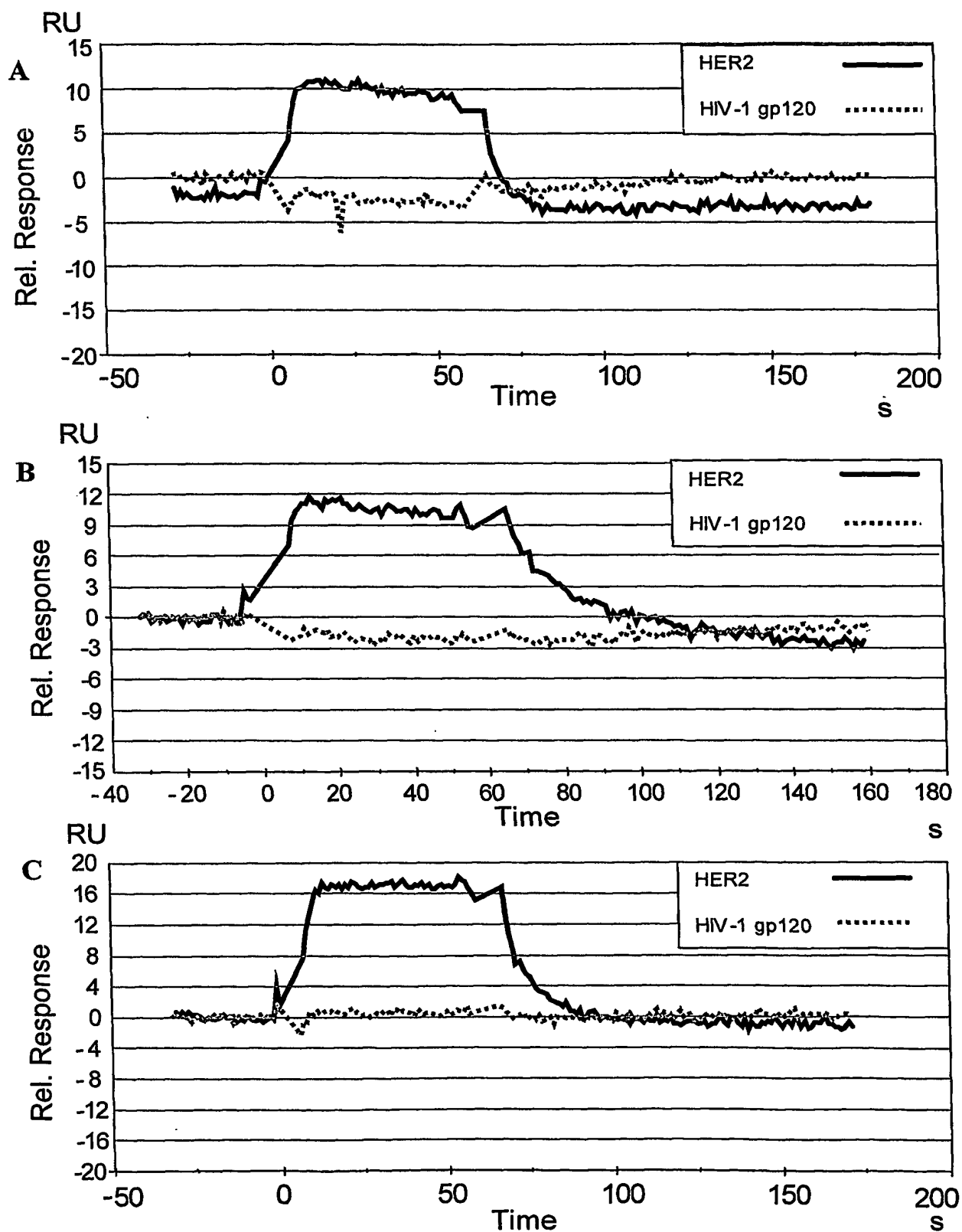


FIGURE 30

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**FIGURE 31**

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**FIGURE 32**

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